

CCS Technical Documentation NEM-2 Series Transceivers

Service Software Instructions

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Quick Guide for Phoenix Service SW Installation



Phoenix Installation Steps in Brief

DCT-4 generation Test and Service Software is called "Phoenix"

These are the basic steps to install the Phoenix

- Install the Phoenix Service SW
- Install the Data Package for Phoenix (product specific data and flash update package)
- Manage connection settings (depends on the tools you are using)
- Update FPS-8 SW (if you use FPS-8)
- Activate FPS-8
- Update JBV-1 Docking Station SW (only when needed)

The flash update files are delivered with then Phoenix Data Package so unless you want to use certain version of this package, separate installation package is not needed any-more. If you want to use it, it should be installed after connection management, before FPS-8 update.

Please refer to Service Manual and Technical Bulletins for more information concerning phone model specific service tools and equipment setup.

Phoenix Service SW

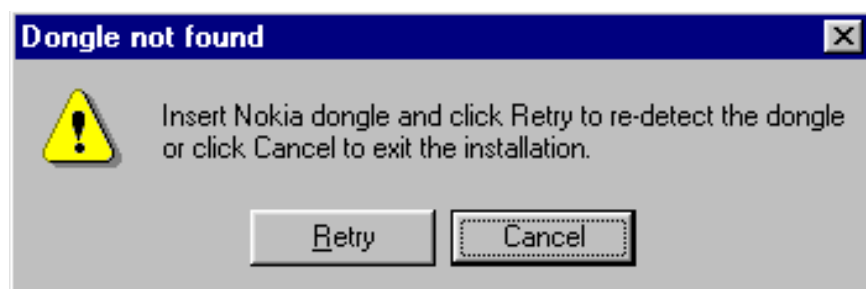
Before Installation

- Check that a Dongle is attached to the parallel port of your computer.
- Download the installation package (e.g. ***phoenix_service_sw_a3_03_83_005.exe***) to your computer (e.g. C:\TEMP)
- Close all other programs
- Run the application file (e.g. ***phoenix_service_sw_a3_03_83_005.exe***) and follow instructions on the screen
- Administrator rights may be required to be able to install Phoenix depending on the Operating System
- If the dongle driver is installed or updated, you need to reboot your PC before the installation can continue.
- If uninstalling or rebooting is needed at any point, you will be prompted by the Install Shield program.

If at any point during installation you get this message, Dongle is not found and installation can't continue.

Possible reasons may be defective or too old PKD-1Dongle (five digit serial number Dongle when used with FPS-8 Prommer) or that the FLS-4S POS Flash Dongle is defective or power to it is not supplied by external charger.

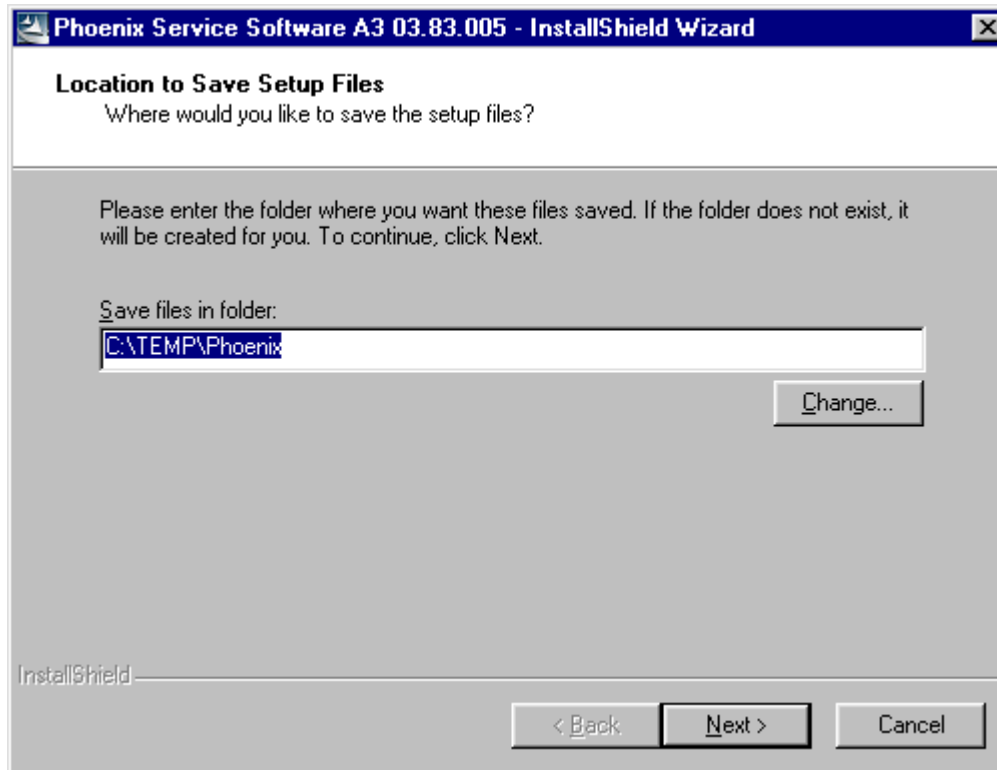
Check the COM /parallel ports used first! After correcting the problem Installation can be restarted.



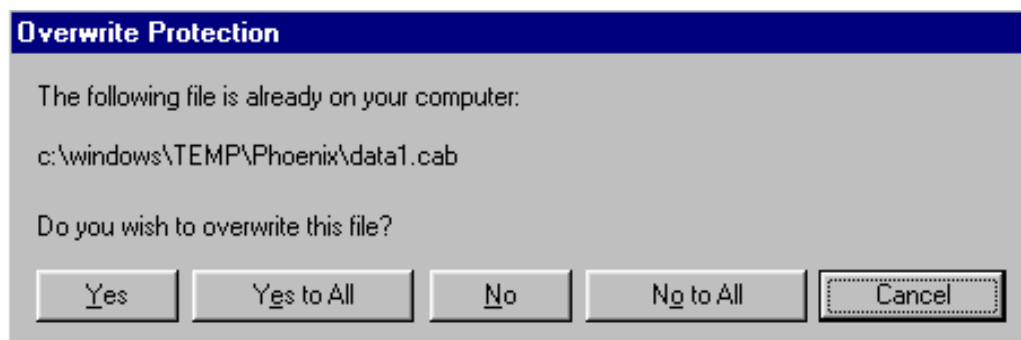
Startup

Run the ***phoenix_service_sw_a3_03_83_005.exe*** to start installation.

When you choose "Next" the files needed for installation will be extracted. Kindly wait.

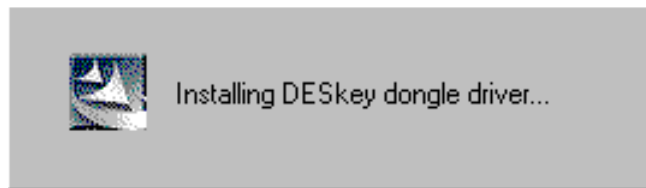


If the setup files are already extracted (left in the file system from previous installation) following dialog appears. Always click "Yes to All" to overwrite the existing setup files.

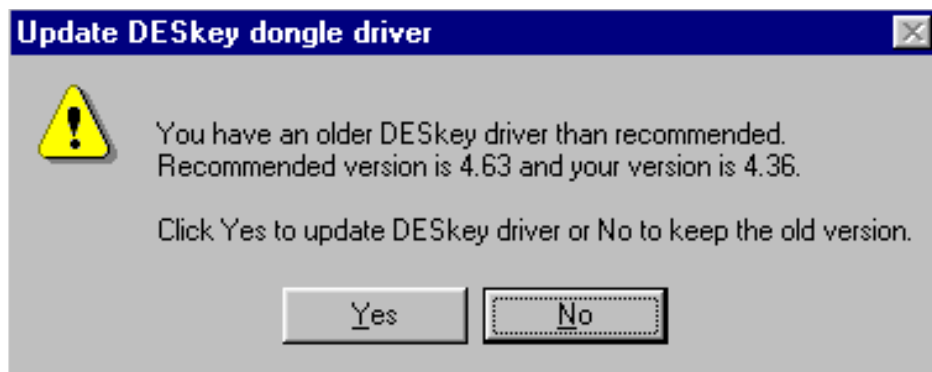


Dongle Driver Installation and Version Check

If there is no previously installed Dongle driver, installation will take place...

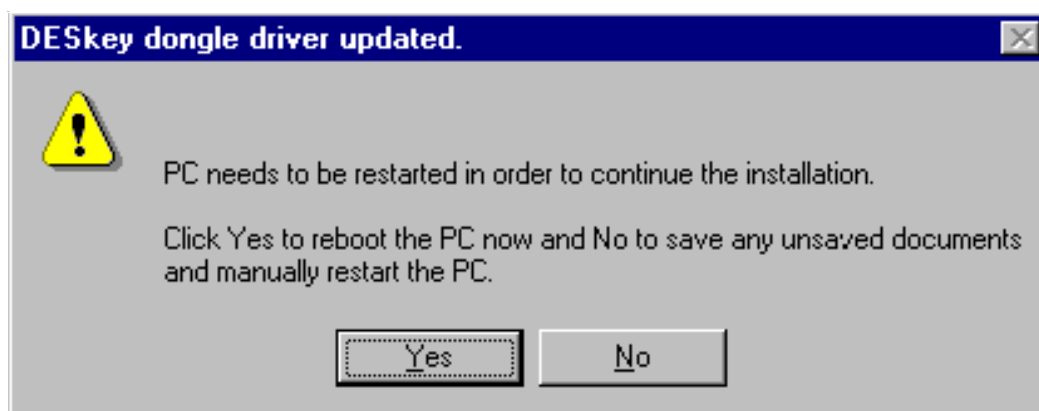


If the Dongle driver is installed and it is older than the latest supported version, the latest version will be installed when you choose "Yes". The latest version is always included in the latest Phoenix installation package.



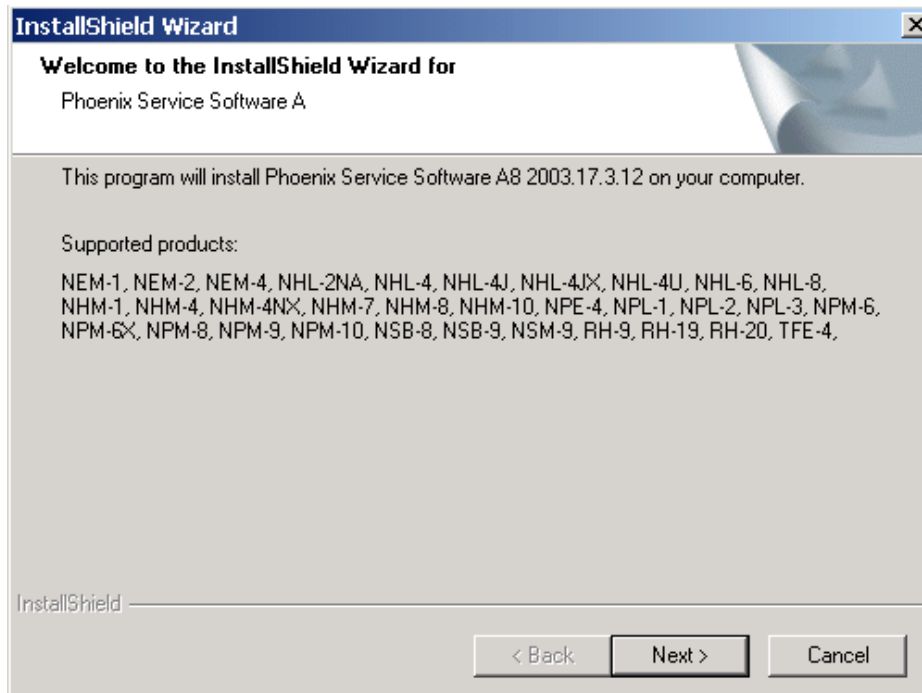
PC needs to be rebooted before installation can continue. Click "Yes" to reboot the PC.

Setup is restarted automatically after reboot.



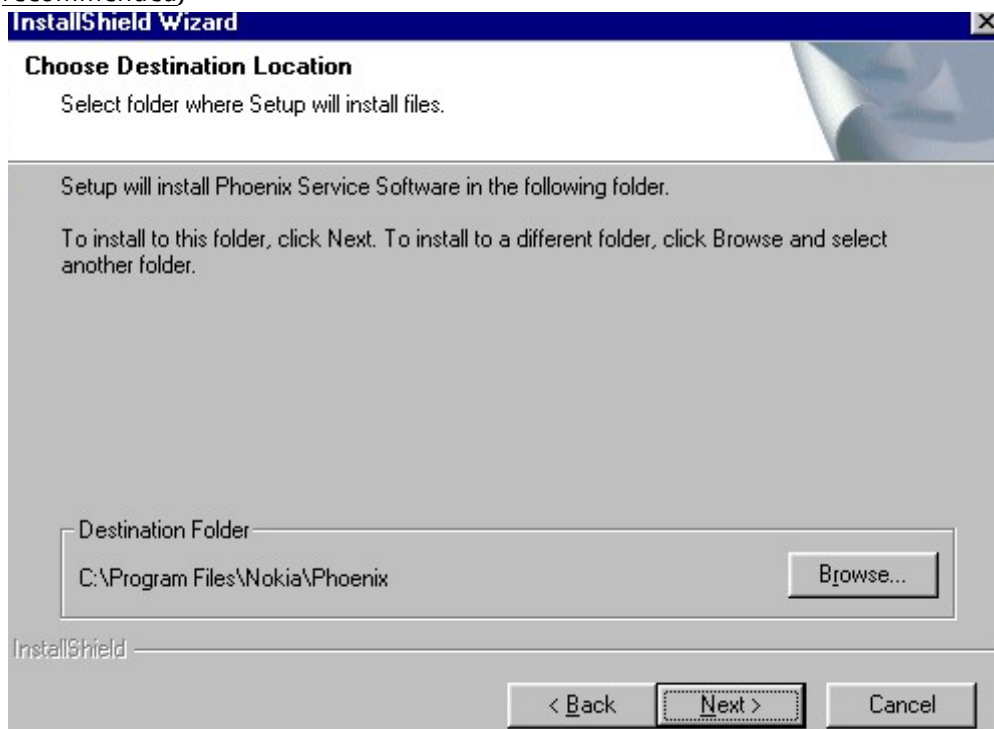
First Time Installation of Phoenix

After Dongle driver installation / update (if needed) installation continues from this step. Click "Next" in Welcome dialog to continue.



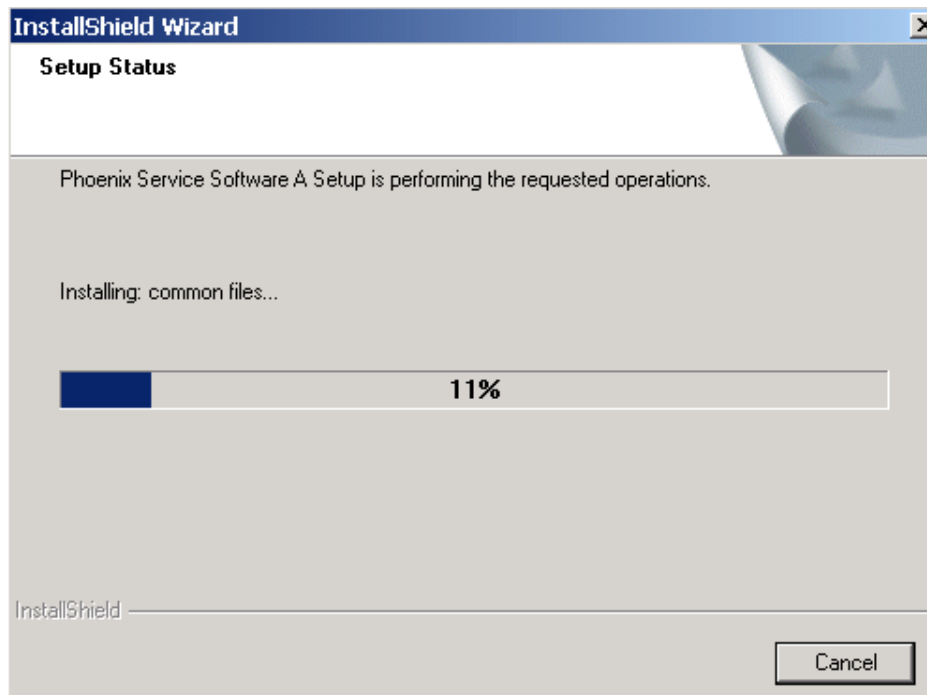
Choose the destination folder, it is recommended to use the default folder **C:\Program-Files\Nokia\Phoenix**.

Choose "Next" to continue. You may choose another location by selecting "Browse" (not recommended)



Setup copies the components, please wait.

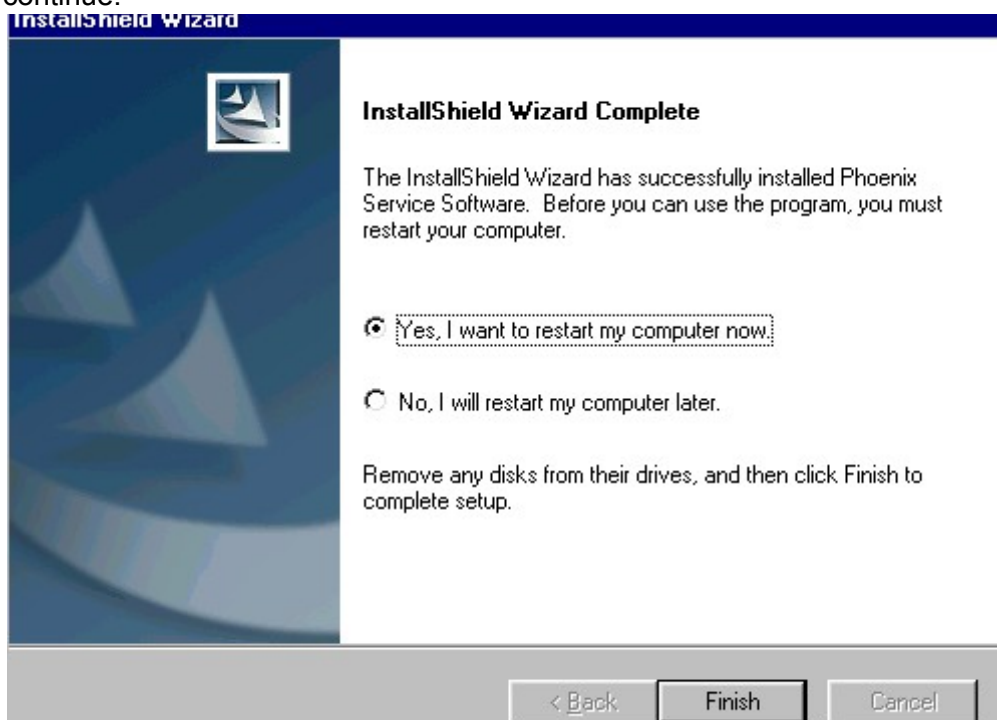
Progress of the setup is shown. Please wait...



If restarting of your computer is needed the Install Shield Wizard will tell you about it.

Select "Yes..." to reboot the PC immediately and "No..." to reboot the PC manually.

Note that Phoenix doesn't work, if components are not registered. Click "Finish" to continue.



After the reboot components are registered and Phoenix is ready for use.

If reboot is not needed components are registered after copying them.



Registering... C:\Program Files\Nokia\Phoenix\Framework\cmnisaeventmanagerfn.dll

If restarting of your computer is not needed, Click "Finish" to exit the setup.

Phoenix is now ready for use.

Now the installation of Phoenix Service SW is ready and it can be used after:

- **Installing Phone model specific Phone Data Package for Phoenix**
- **Configuring the connections**
- **Updating the Flash Update Package files used with FPS-8* and FLS-4* tools**

Update Installation of Phoenix

If you already have the Phoenix Service SW installed on your computer, sooner or later there will be need to update it when new versions are released.

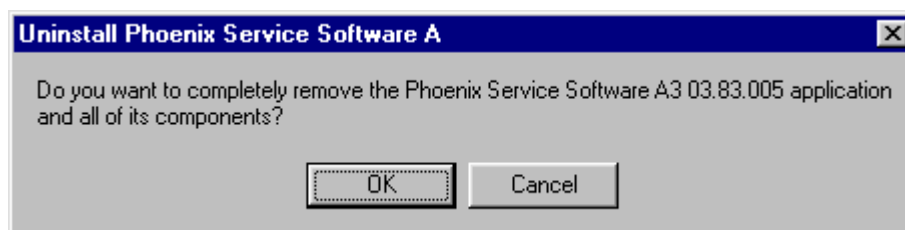
Please note that very often the Phoenix Service SW and the Phone Specific Data Package for Phoenix come in pairs, meaning that certain version of Phoenix can only be used with certain version of Data Package. Always use the latest available versions of both. Instructions can be found in phone model specific Technical Bulletins.

To update the Phoenix you need to take exactly the same steps as when installing it for the first time.

- Download the installation package to your computer hard disk
- Close all other programs
- Run the application file (e.g. **phoenix_service_sw_a3_03_83_005.exe**)
- Dongle driver version will be checked and if need be, updated
- After reboot installation starts automatically
- Newer version of Phoenix will be installed

When you update the Phoenix from old to new version (e.g. update from 3.83.005 to 3.83.0055), the update will take place automatically without uninstallation

If you try update the Phoenix with the same version that you already have (e.g. 3.55 to 3.55) you are asked if you want to uninstall the version of Phoenix you have on your PC. Answer "OK" to uninstall Phoenix, "Cancel" if you don't want to uninstall.



If you try to install an older version (e.g. downgrade from 3.83.005 to 3.83.005) installation will be interrupted.

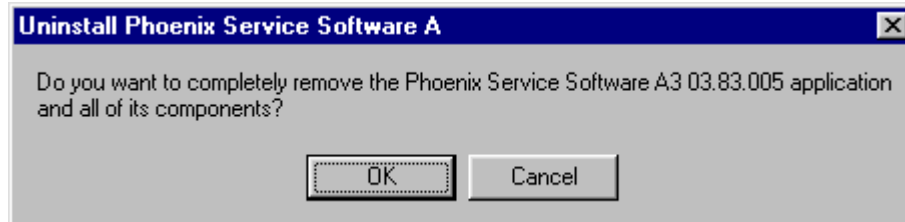
Always follow the instructions on the screen.

How to Uninstall Phoenix

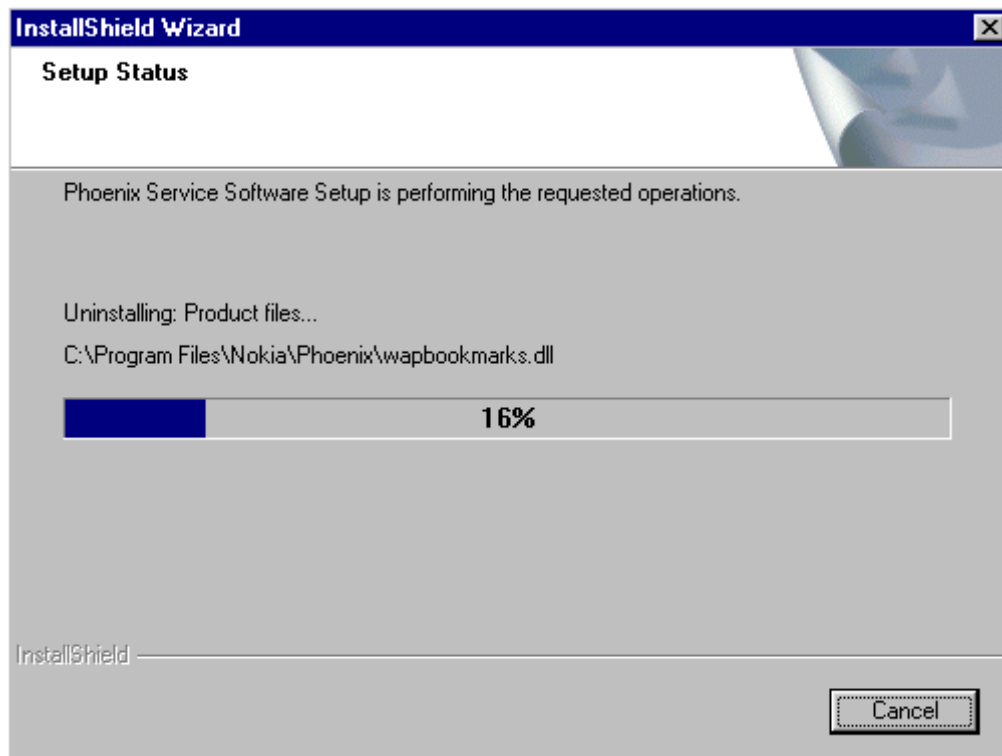
Uninstallation can be done manually from Windows Control Panel - Add / Remove Programs.

Choose "Phoenix Service Software" and click "Add/Remove".

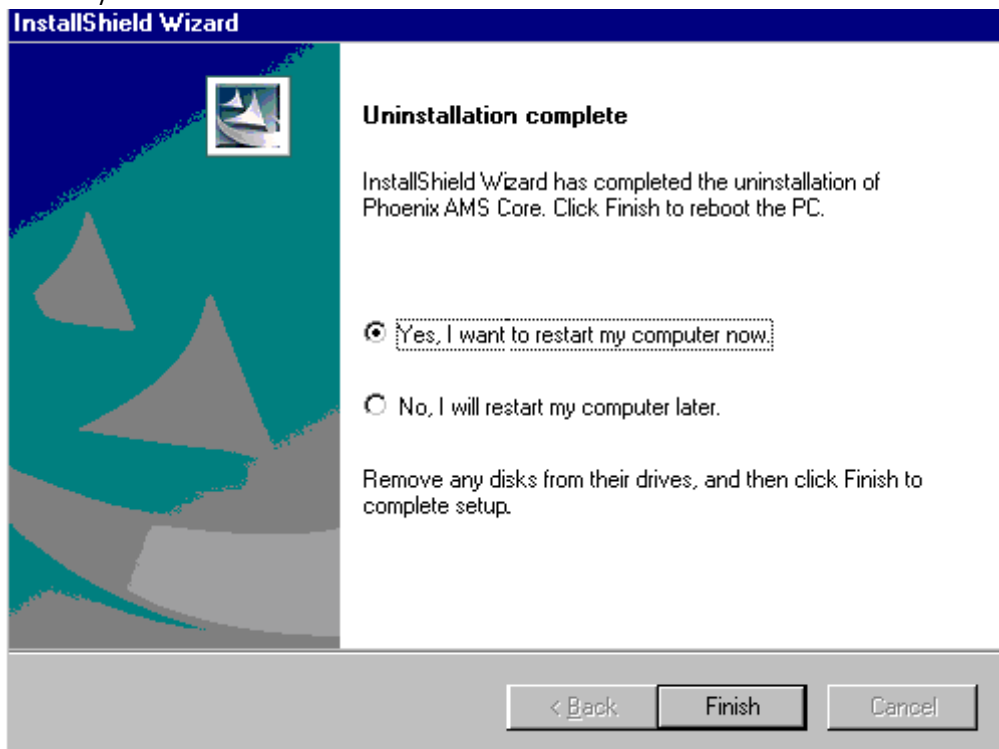
Choose "OK" to uninstall



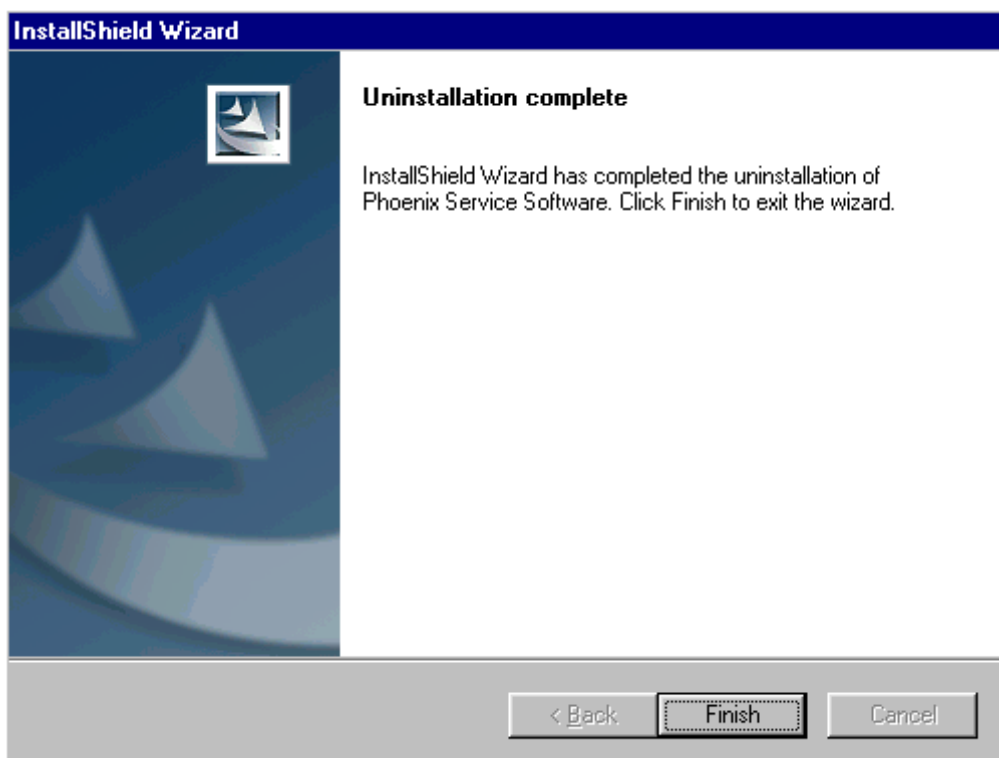
Progress of the uninstallation is shown.



You may have to reboot the PC after uninstallation.



If restarting is not needed, the following dialog will appear:



Note! If you have different product packages installed, components are uninstalled only if they are not included in other product packages.

Data Package for Phoenix (Product Specific)

Before installation

Product Data Package contains all product specific data to make the Phoenix Service Software and tools usable with a certain phone model.

It also includes the latest version of flash update package for FLS-4* and FPS-8*

- Check that the Dongle is attached to the parallel port of your computer.
- Install Phoenix Service SW
- Download the installation package (e.g. **nem-2_dp_1.00.exe**) to your computer (e.g. C:\TEMP)
- Close all other programs
- Run the application file (e.g. **nem-2_dp_1.00.exe**) and follow instructions on the screen

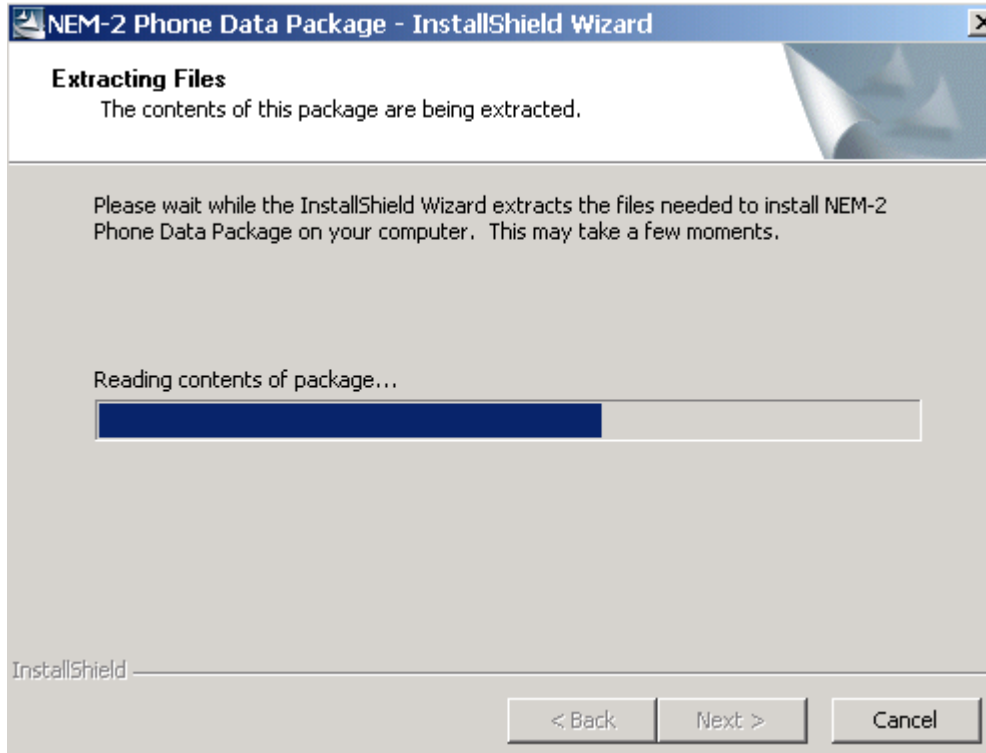
If you already have the Phoenix Service SW installed on your computer, sooner or later there will be need to update it when new versions are released.

Please note that very often the Phoenix Service SW and the Phone Specific Data Package for Phoenix come in pairs, meaning that certain version of Phoenix can only be used with certain version of Data Package. Always use the latest available versions of both. Instructions can be found in phone model specific Technical Bulletins.

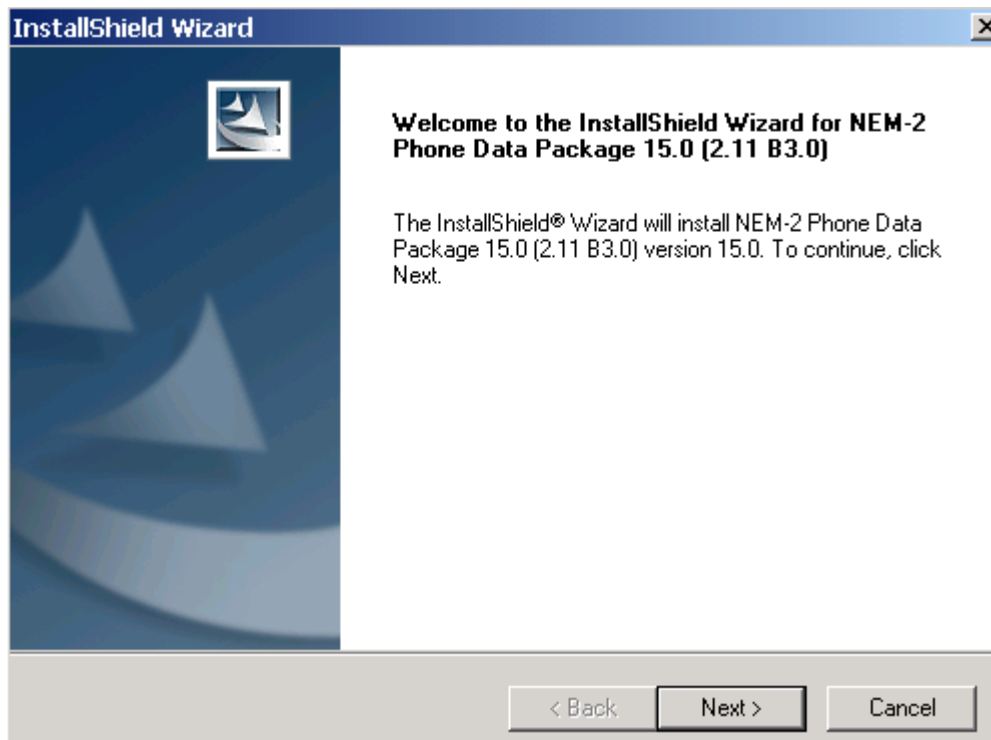
Installation of Phoenix Data Package (Product Specific)

Run the *nem-2_dp_v_1.00.exe* to start installation.

When you choose "Next" the files needed for installation will be extracted. Please wait



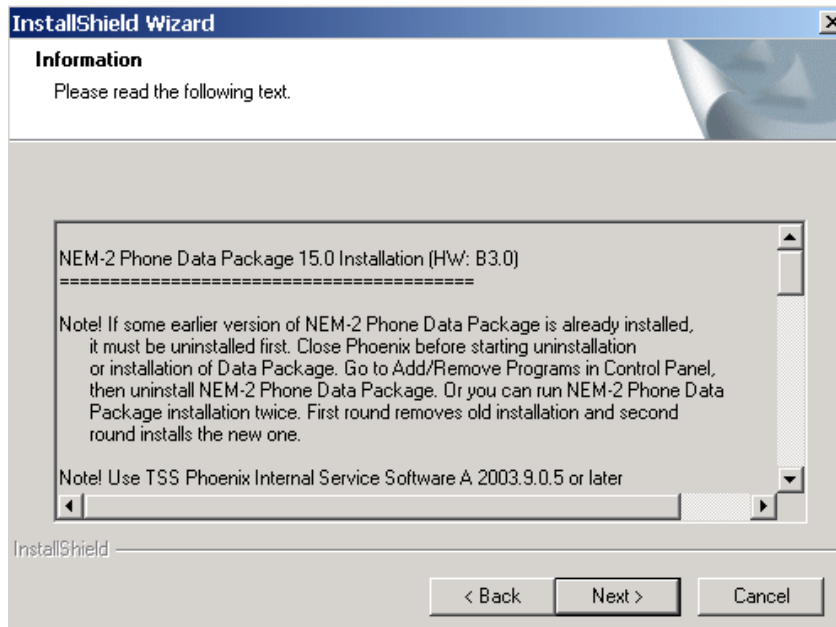
Choose "Next" to continue.



From this view you can see the contents of the Data Package.

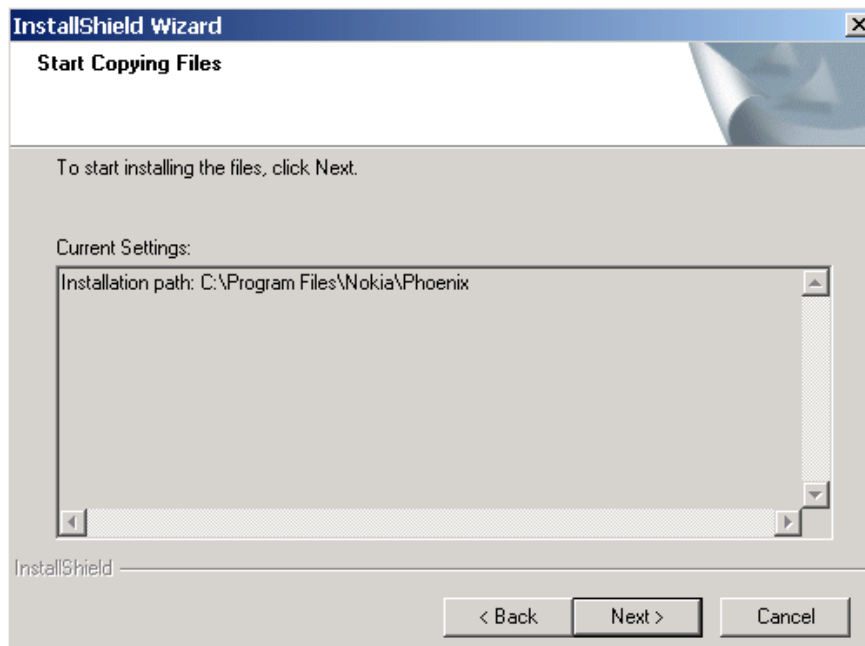
Read the text carefully.

There should be information about the Phoenix version needed with this data package. Choose "Next".

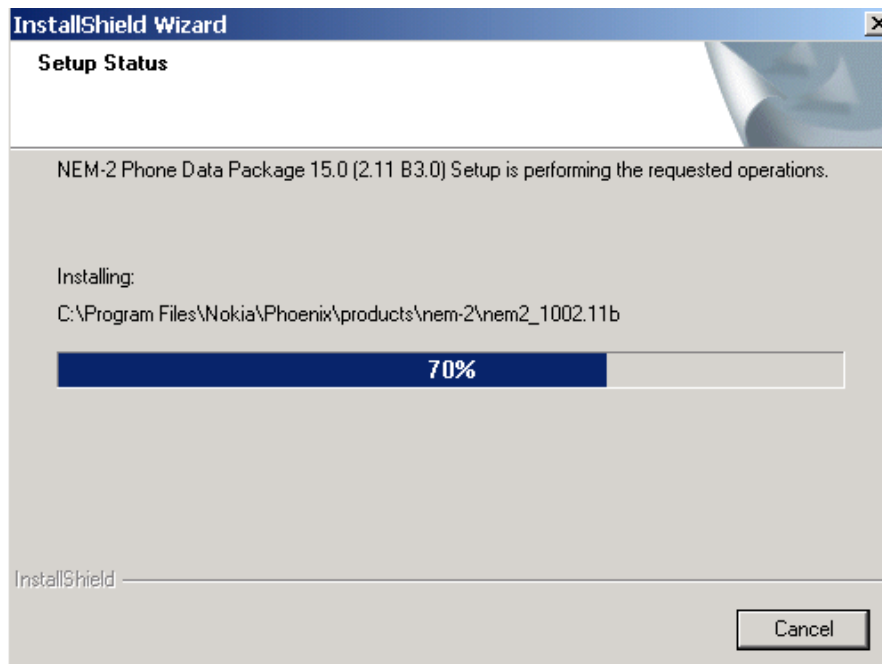


Confirm location and choose "Next" to continue.

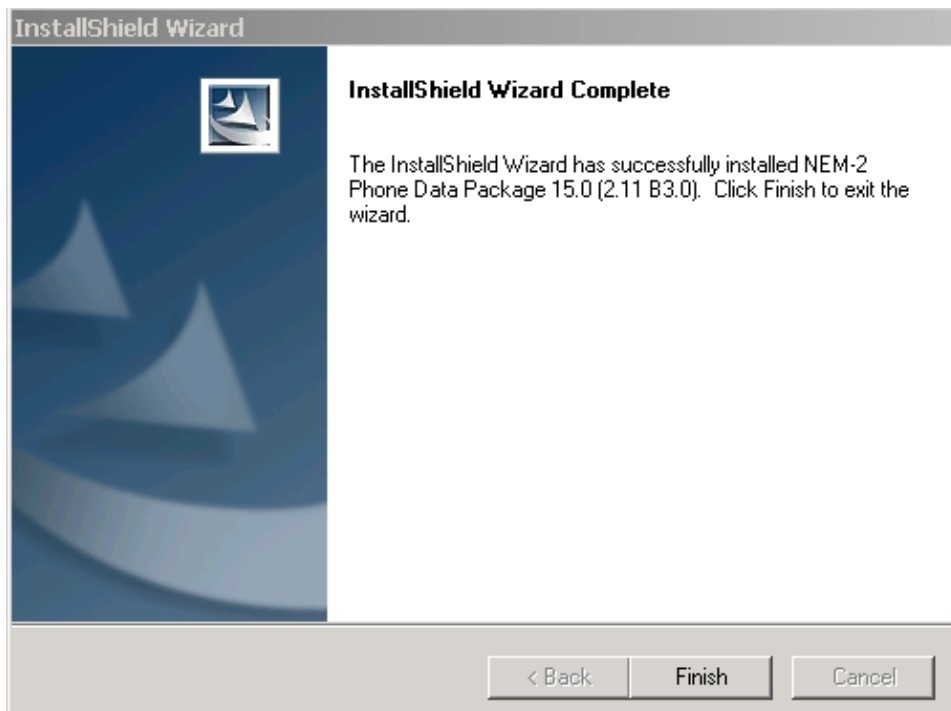
Install Shield checks where the Phoenix application is installed and the directory is shown. Choose "Next" to continue.



Phone model specific files will be installed... please wait.



Choose "Finish" to complete installation.

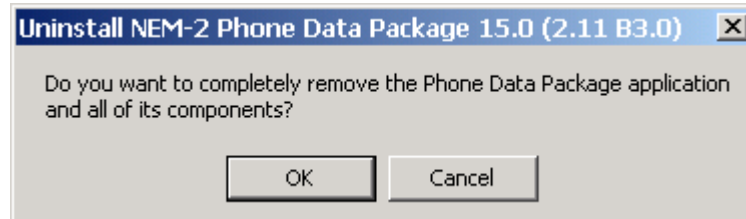


You now have all phone model specific files installed in your Phoenix Service SW.

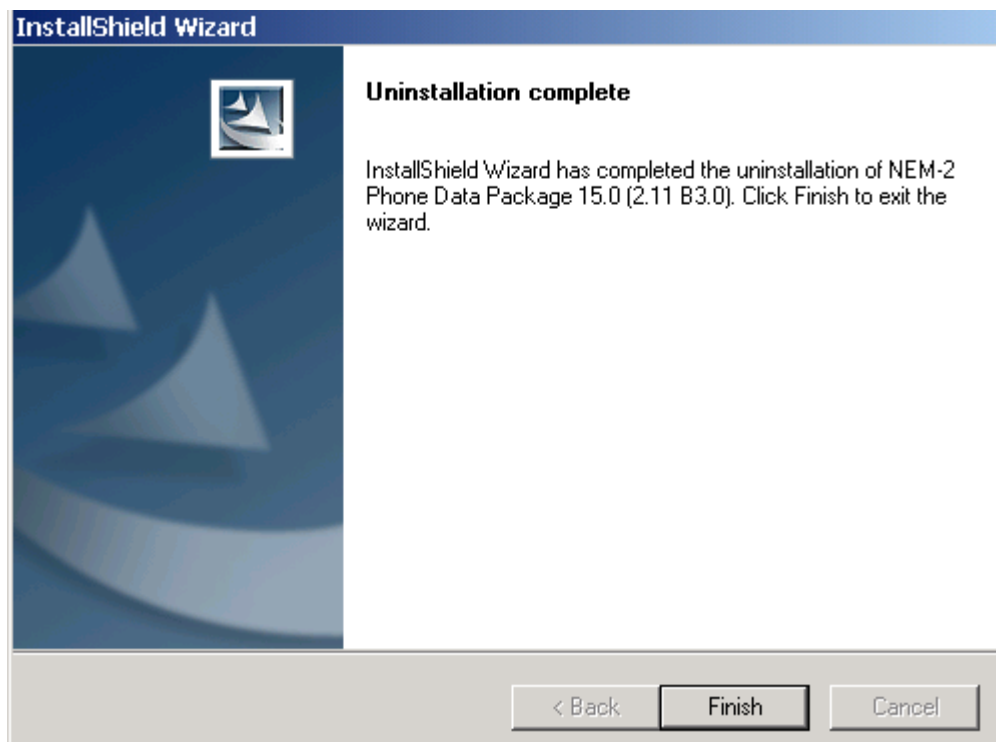
How to Uninstall Data Package

Uninstallation can also be done manually from Windows Control Panel / Add / Remove Programs/ "NEM-2 Phone Data Package".

If you try to install the same version of Phoenix Data Package that you already have, you are asked if you want to uninstall the version you have on your PC. Answer "OK" to uninstall, "Cancel" if you don't want to uninstall. Older versions of data packages do not need to be uninstalled.



Once the previously installed Data package is uninstalled, choose "Finish".



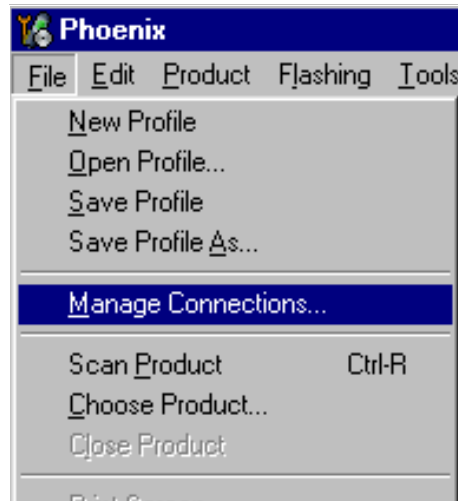
Run the *nem-2_dp_v_1.00.exe* again to continue installation from the beginning.

How to Manage Connections

Start Phoenix Service SW and Login.



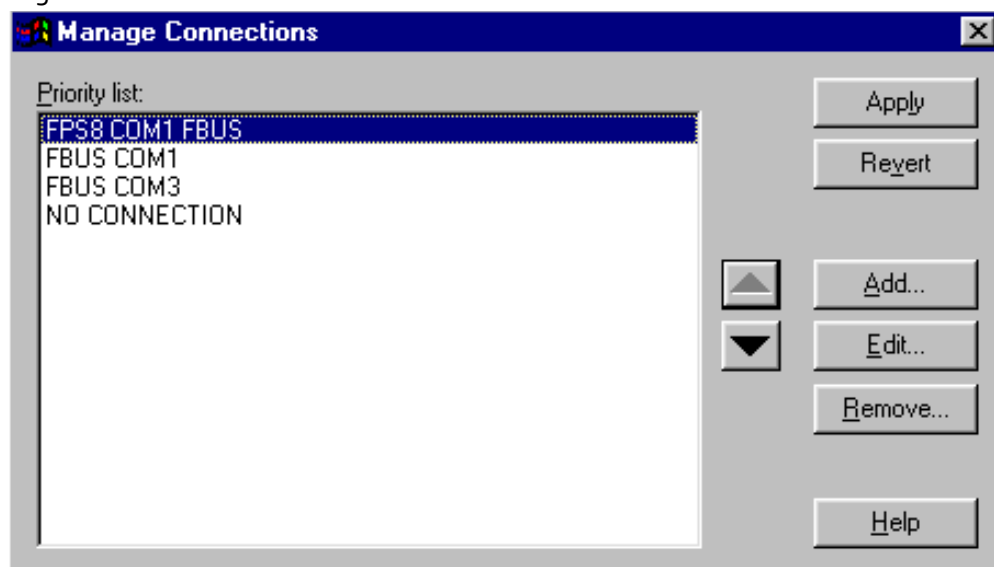
Choose "Manage Connections" From "File" – Menu



Existing connections can be selected, edited, deleted and new ones created by using this dialog.

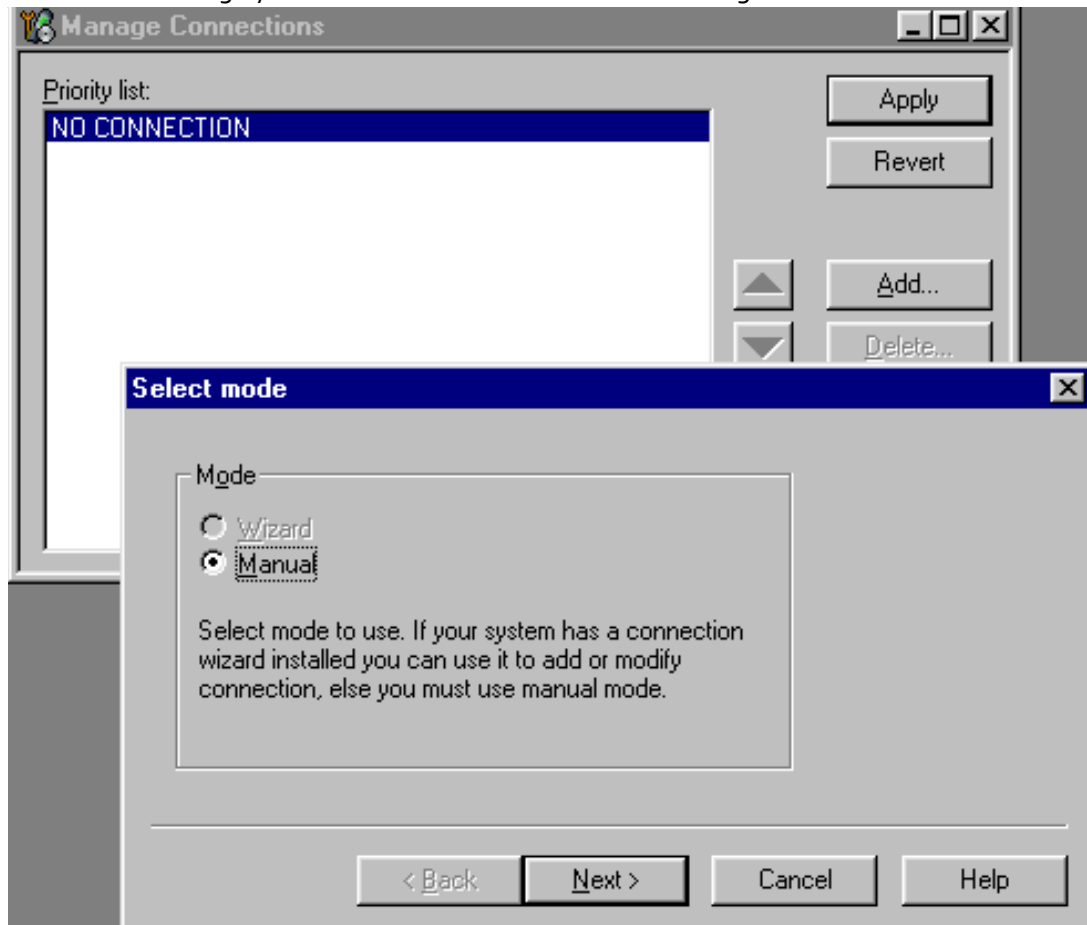
A connection can be created either manually or by using a Connection Wizard.

To add new connection, choose "Add" and select if you want to create it manually or by using the Wizard.



Choose "Next" to continue.

In the next dialogs you will be asked to select some settings for the connection



Manual Settings

A) For **FLS-4S POS Flash Device** choose following connection settings

Media: FBUS

COM Port: Virtual COM Port used by FLS-4 Please check this always!

(To check please go to Windows / Control Panel / FLS Virtual Port / Configuration)

B) For **FPS-8 Flash Prommer** choose following connection settings:

Media: FPS-8

Port Num: COM Port where FPS-8 is connected

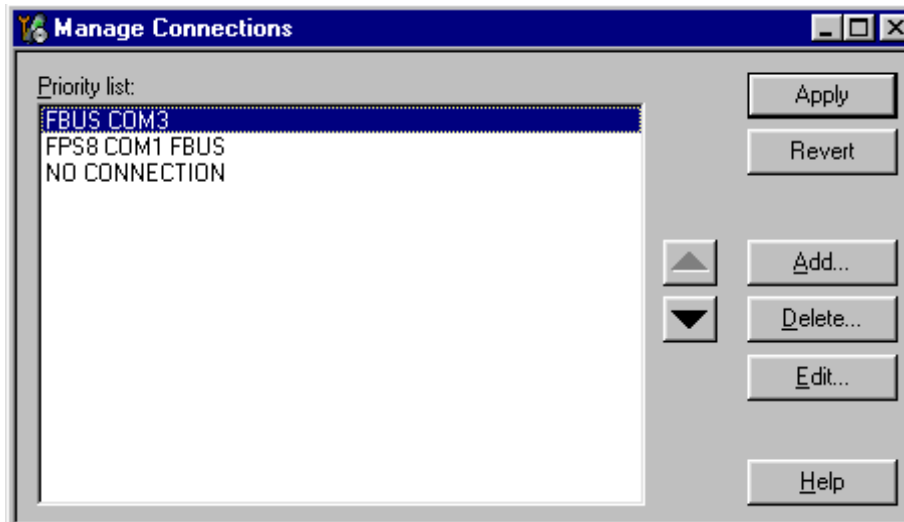
COMBOX_DEF_MEDIA: FBUS

Choose "Finish" to complete.

If you use the Wizard, connect the tools and a phone to your PC and the wizard will automatically try to configure the correct connection.

Activate the connection you want to use by clicking it and use up/down arrows to move it on top of the list. Choose "Apply".

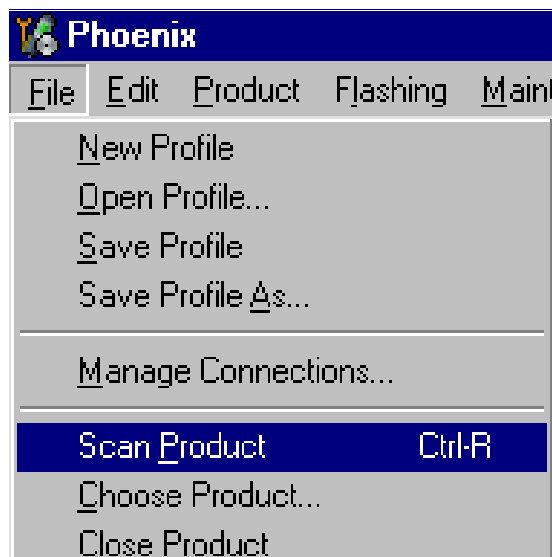
The connection is now selected and can be used after closing the "Manage Connections" window.



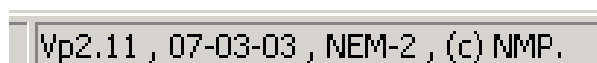
Selected connection will be shown on the right hand bottom corner of the screen.



To use the selected connection, connect the phone to Phoenix with correct service tools, make sure that it is switched on and select "Scan Product".



When the Product is found, Phoenix will load product support and when everything is ready, name of the loaded product support module and its version will be shown on the bottom of the screen.



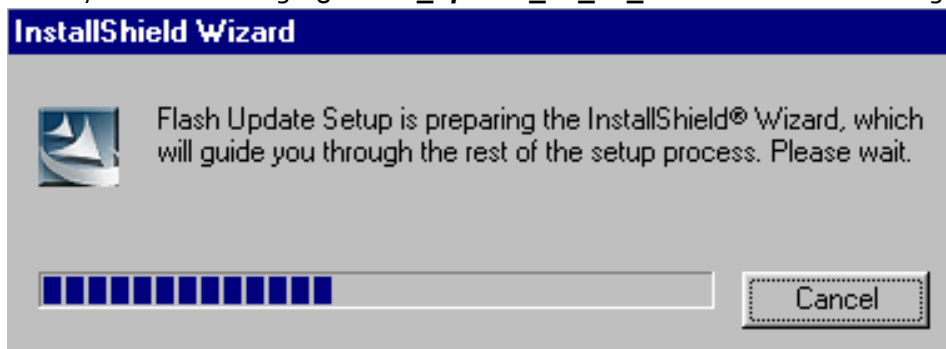
How to Update Flash Support Files for FPS-8* and FLS-4*

Before Installation

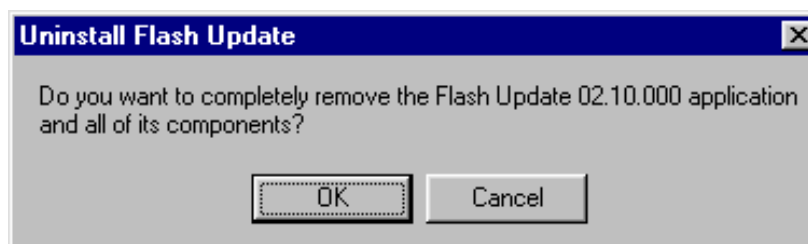
- Install Phoenix Service SW and Phoenix data package.
- Install the phone model Specific Datapackage for Phoenix
- The flash support files are delivered in the same installation package with Phoenix data package.
- Normally it is enough to install the data package only before updating the FPS-8.
- Separate installation package is for flash support files are available, and the files can be updated according to this instruction.

Installing the Flash Support Files

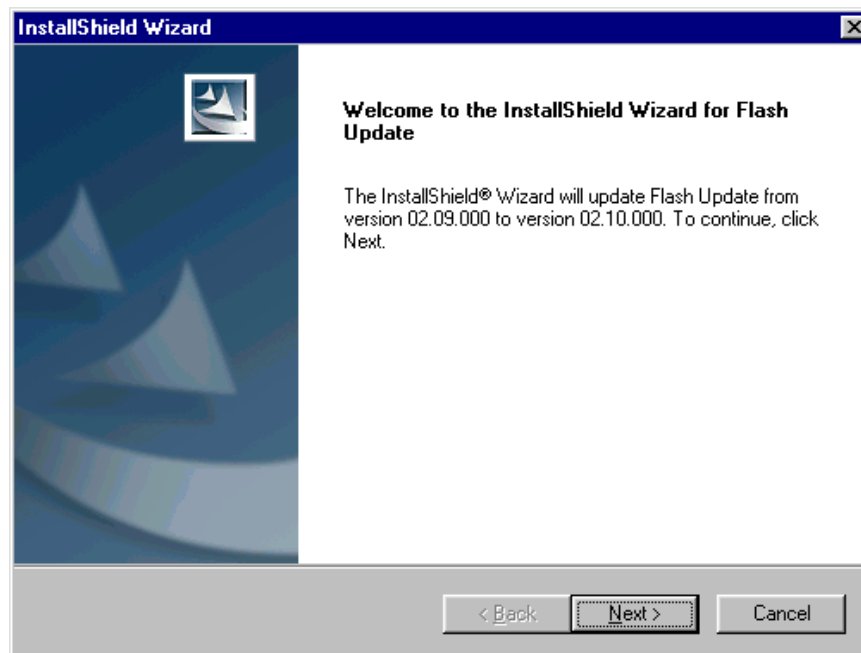
Start by double clicking eg. **flash_update_02_10_00.exe**. Installation begins.



If you already have the same Flash Update package files installed, you need to confirm if you want them to be reinstalled.

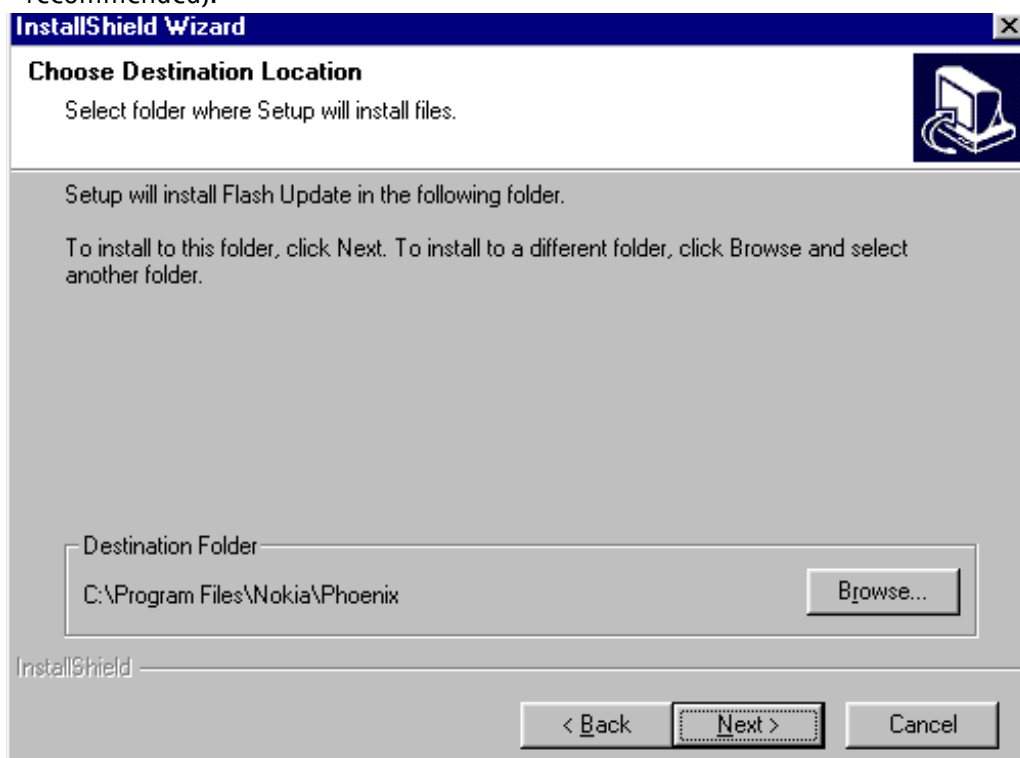


Choose "Next" to continue installation

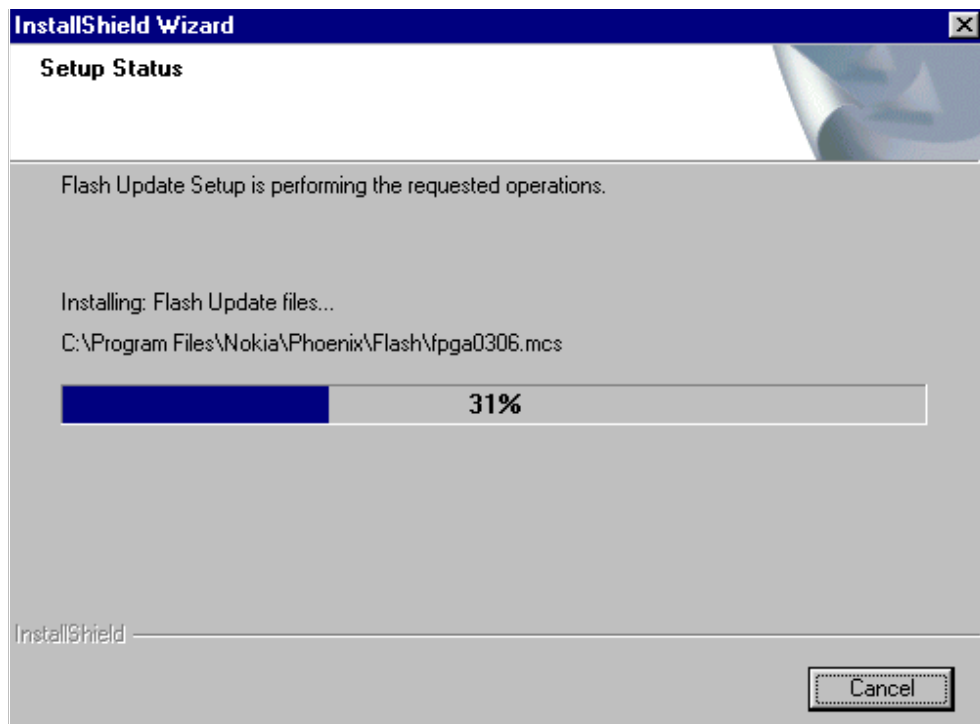


It is **highly** recommended to install the files to the default destination folder *C:\Program Files\Nokia\Phoenix*.

Choose "Next" to continue. You may choose another location by selecting "Browse" (not recommended).

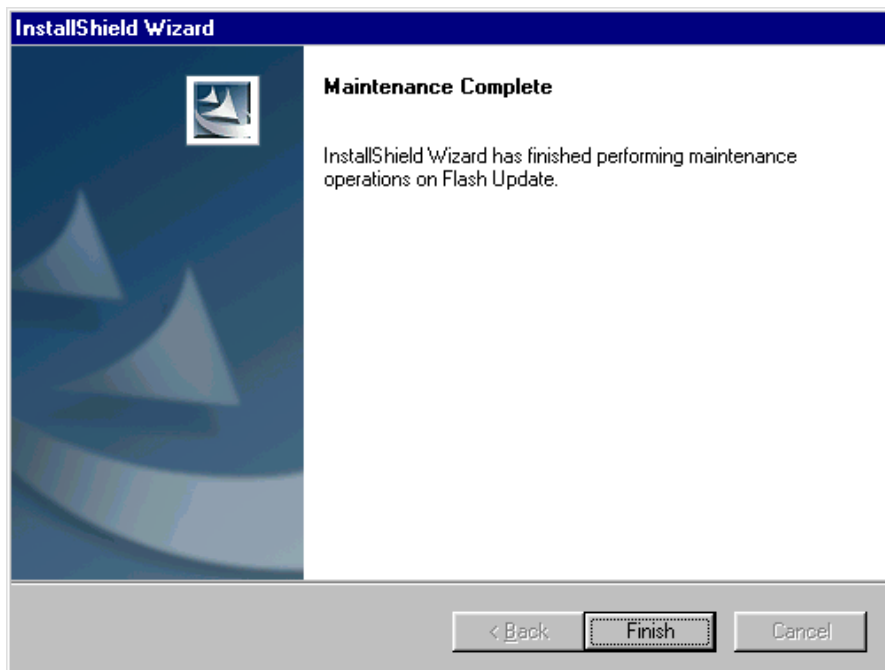


Installation continues...



Choose "Finish" to complete procedure.

- **FLS-4 can be used right after Flash Update Package is installed.**
- **FPS-8* must be updated by using Phoenix!**

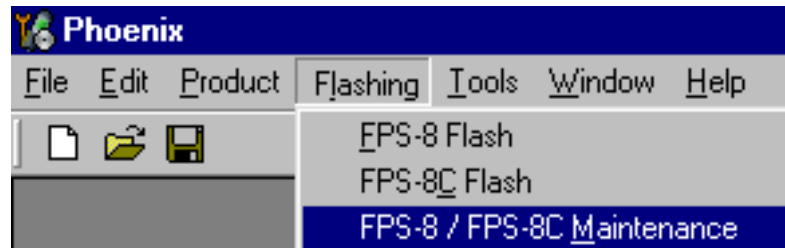


How to Update The FPS-8* Flash Prommer SW

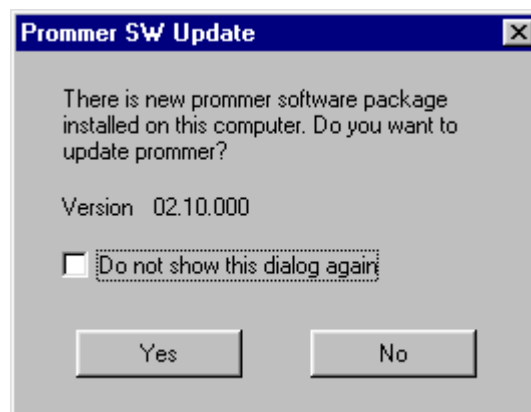
Start Phoenix Service Software



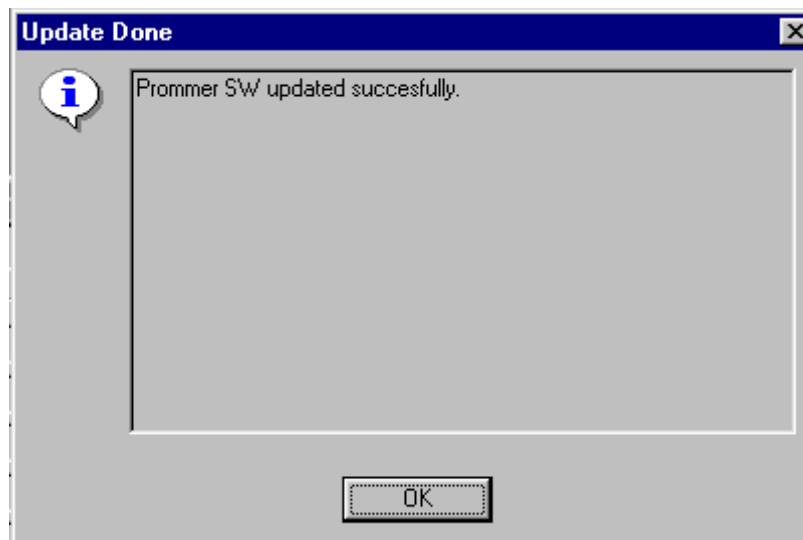
Select "FPS-8 / FPS-8C maintenance" from "Flashing" menu.

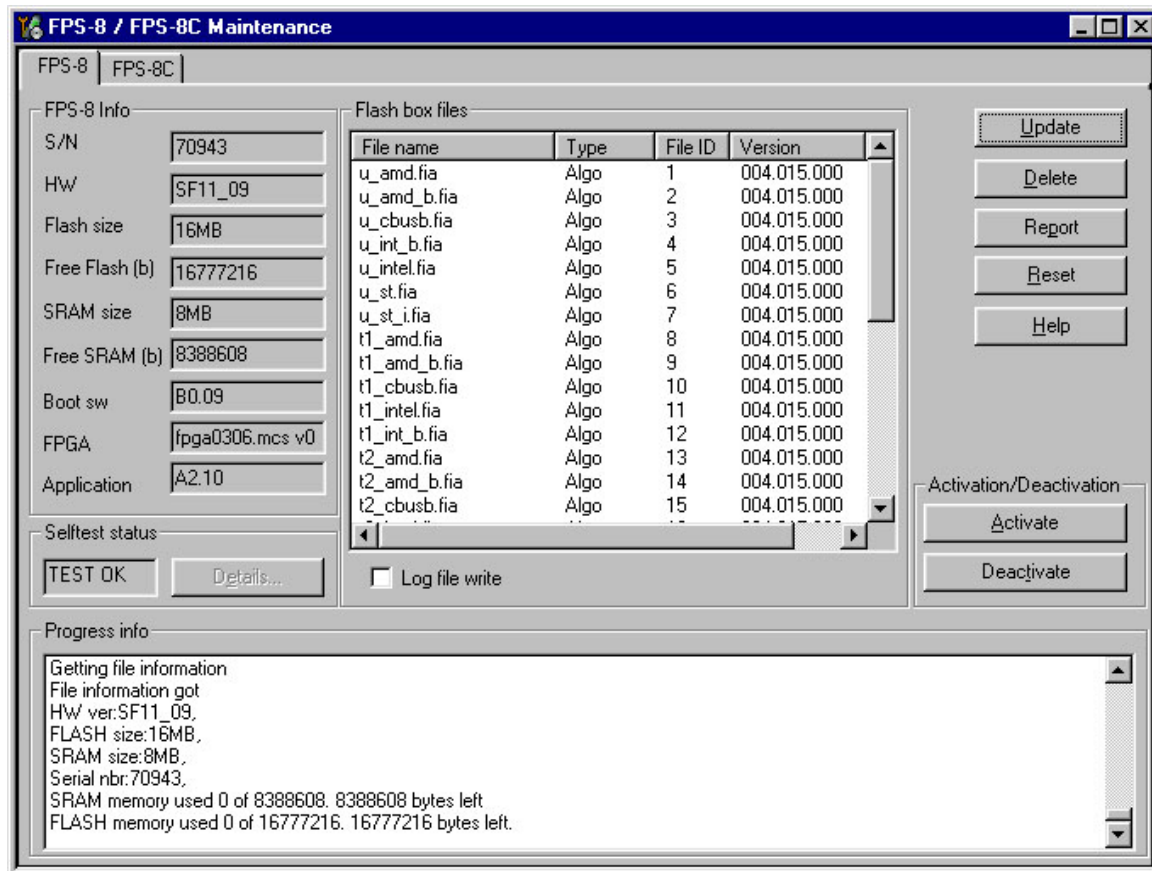


When new FPS-8 flash update package is installed to computer you will be asked to update the files to your FPS-8 Prommer. Select "Yes" to update files..

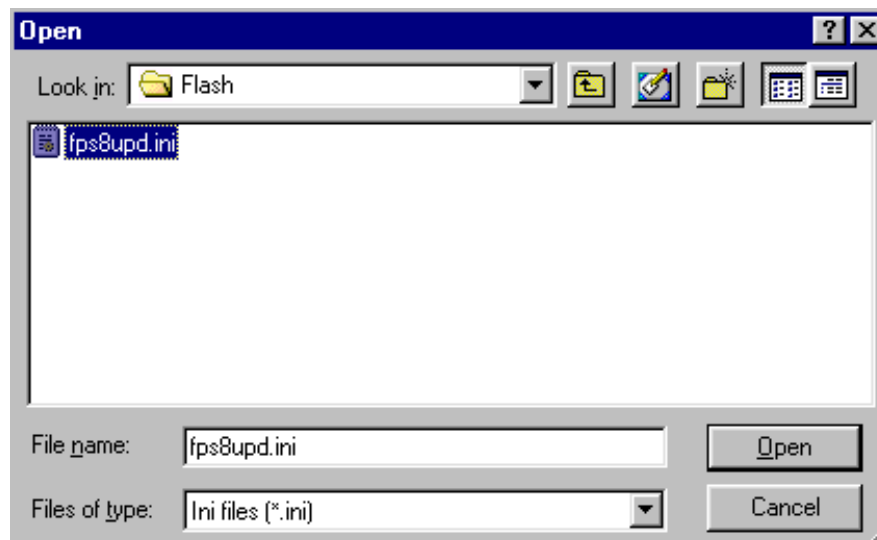


Update procedure takes a couple of minutes.





FPS-8 sw can also be updated by pressing "Update" button and selecting appropriate **fps8upd.ini** file under **C:\Program Files\Nokia\Phoenix\Flash** - directory



All files can be loaded separately to FPS-8. To do this, just press right mouse button in "Flash box files" window and select file type to be loaded.

More information and help can be found from the "Help" dialog.

FPS-8 Activation and Deactivation

- Before the FPS-8 can be successfully used for phone programming, it must be first activated.
- If there is a need to send FPS-8 box to somewhere e.g. for repair, box must be first deactivated.

Activation

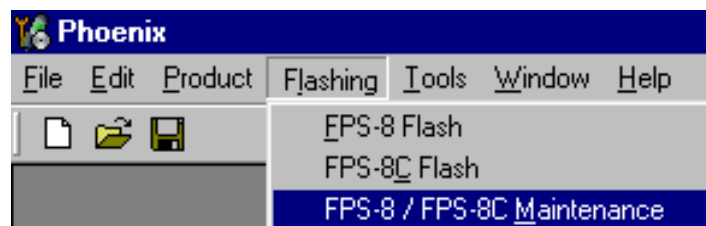
Before FPS-8 can be successfully used for phone programming, it must be first activated.

Fill in first "FPS-8 activation request" sheet, in the FPS-8 sales package and follow the instructions in the sheet.

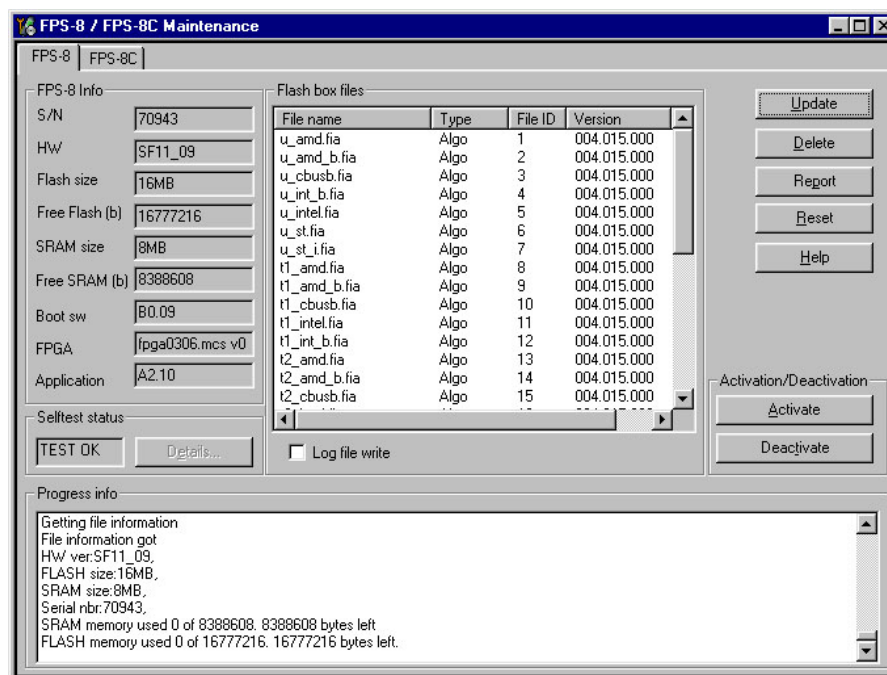
When activation file is received (e.g. 00000.in), copy it to **C:\Program-Files\Nokia\Phoenix\BoxActivation** - Directory on your computer (This directory is created when Phoenix is installed).

Start Phoenix Service Software.

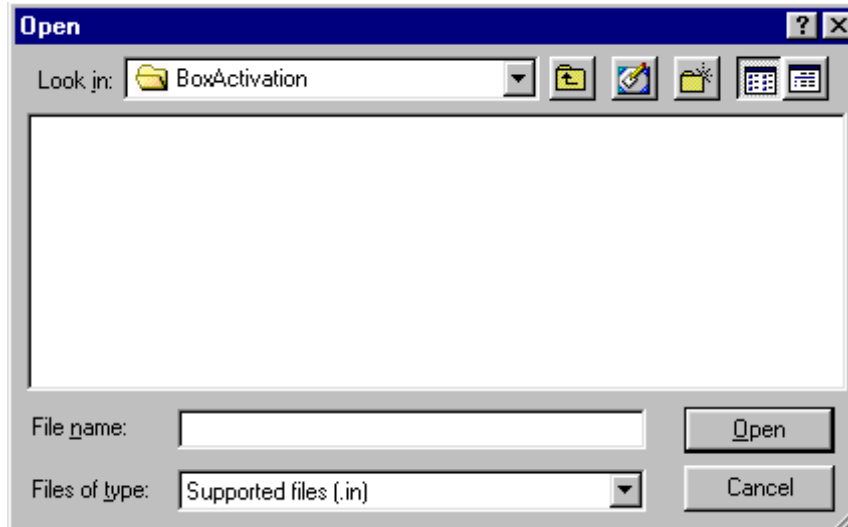
Select "FPS-8 / FPS-8C maintenance" from "Flashing" menu.



Select "Activate" from the "FPS8/8C Maintenance" – UI.



The activation file you saved to *C:\ProgramFiles\Nokia\Phoenix\BoxActivation* - directory will be shown (e.g. 00000.in), check that it is correct.



Box will be activated when you choose "Open"

Turn FPS-8 power off and on to complete activation

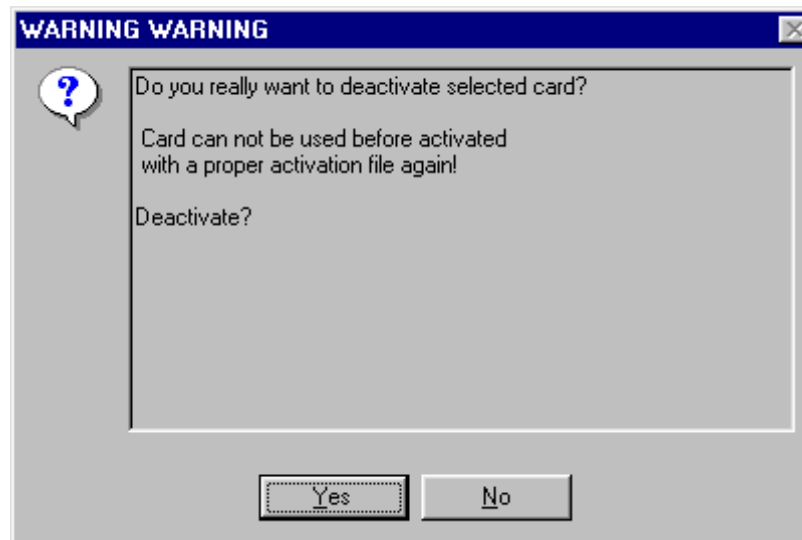
Deactivation

Start Phoenix Service Software.

Select "FPS-8 / FPS-8C maintenance" from "Flashing" menu

Select "Deactivate" from the "FPS8/8C Maintenance" – UI.

Confirm Deactivation by choosing "Yes", Box will be deactivated.



Turn FPS-8 power off and on to complete deactivation

JBV-1 Docking Station SW

The JBV-1 Docking Station is a common tool for all DCT-4 generation products. In order to make the JBV-1 usable with different phone models, a phone specific Docking Station Adapter is used for different service functions.

The JBV-1 Docking Station contains Software (Firmware) which can be updated.

You need the following equipment to be able to update JBV-1 software:

- PC with USB connection
- Operating System supporting USB (Not Win 95 or NT)
- USB Cable (Can be purchased from shops or suppliers providing PC hardware and accessories)
- JBV-1 Docking Station
- External Power Supply 11-16V

Before Installation

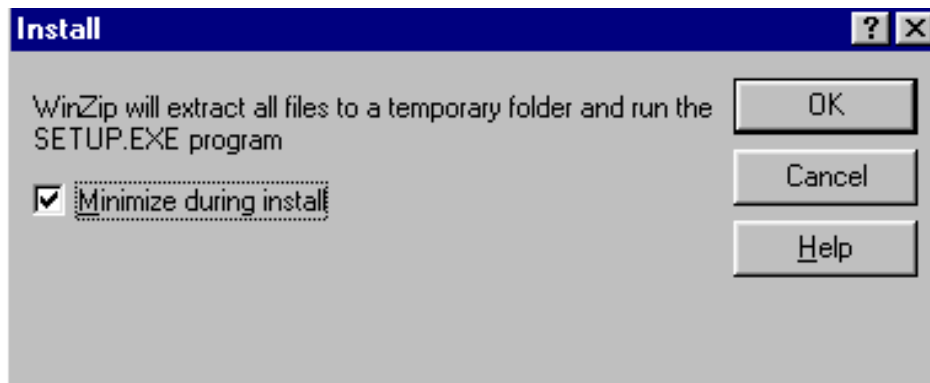
- Download *Jbv1_update.zip* – file to your computer (e.g. C:\TEMP) from your download web site.
- Close all other programs
- Follow instructions on the screen

Installing SW Needed for the JBV-1 SW Update

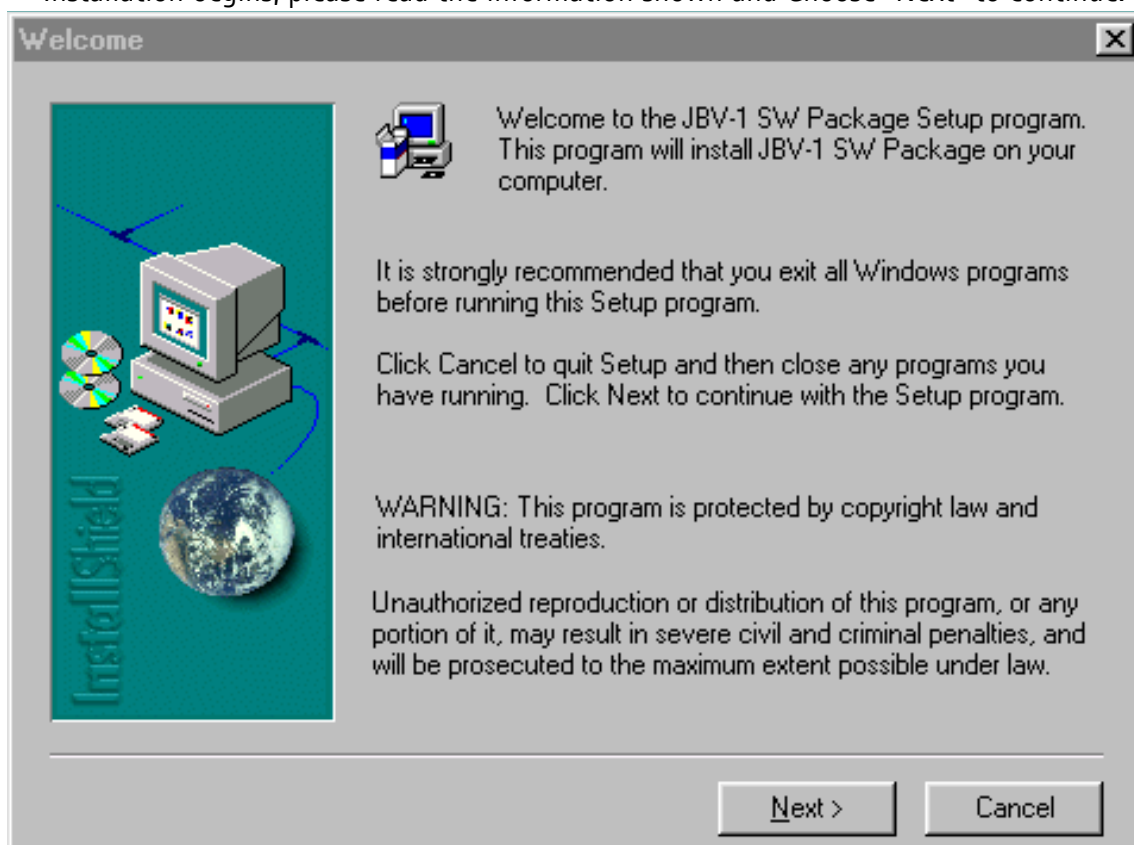
Note: DO NOT CONNECT THE USB CABLE / JBV-1 TO YOUR COMPUTER YET!

Run *Jbv1_update.zip* file and start SW Installation by double clicking *Setup.exe*.

Files needed for JBV-1 Package setup Program will be extracted.

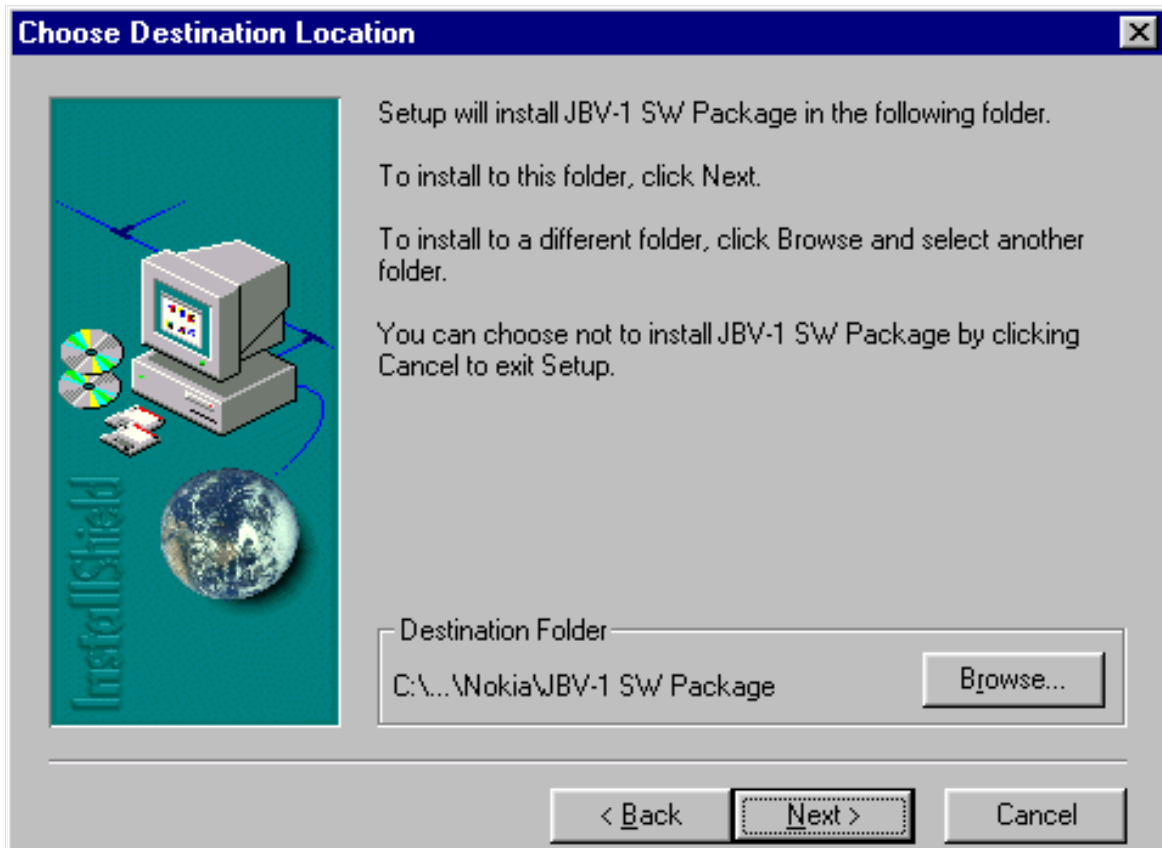


Installation begins, please read the information shown and Choose "Next" to continue.

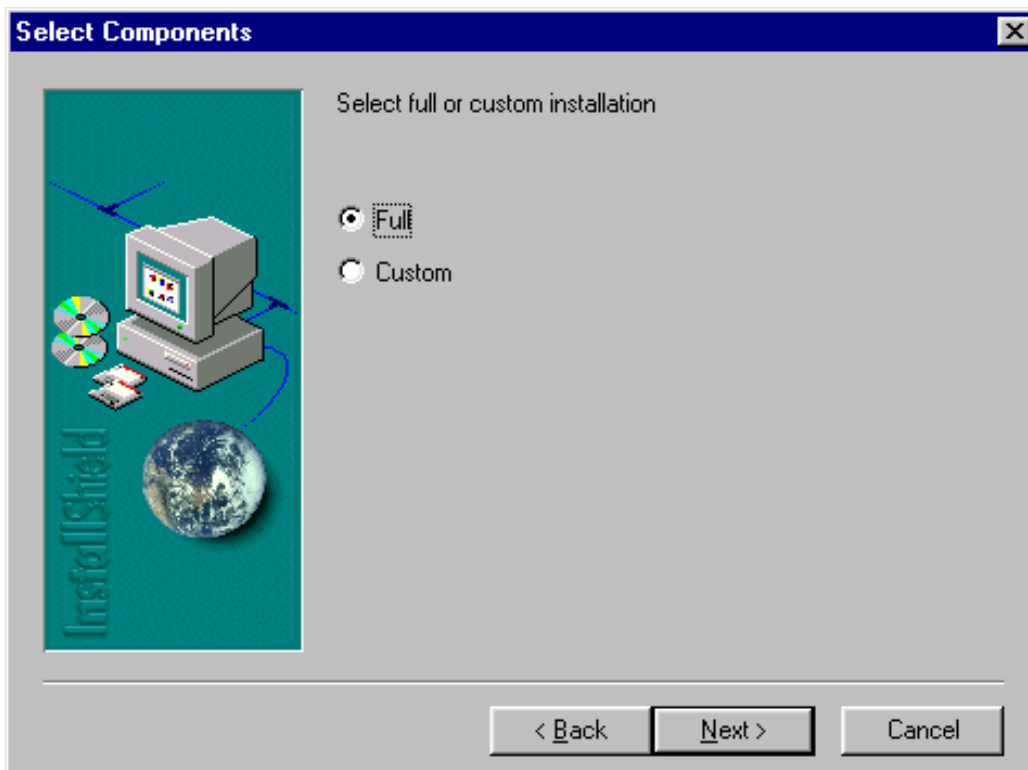


Use suggested destination folder where JBV-1 SW Package will be installed and choose

"Next" to continue.

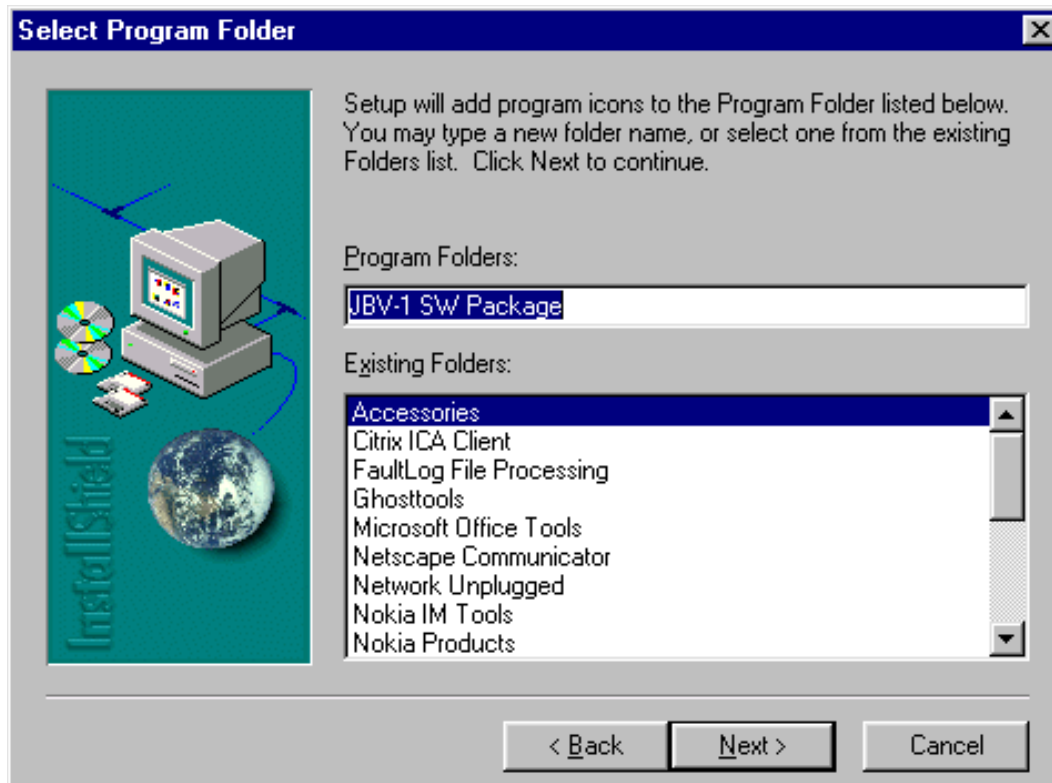


Select "Full" Installation and choose "Next" to continue

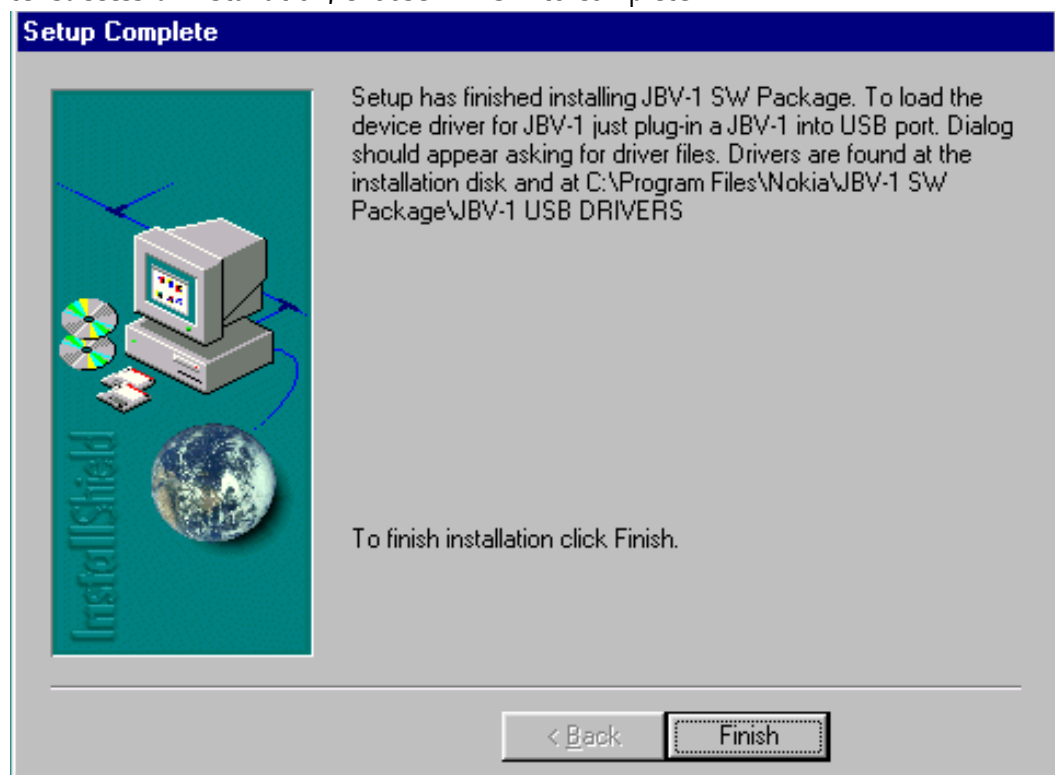


Program Folder will be created. Choose "Next" to continue, Software files will be

installed.



After successful installation, choose "Finish" to complete.



NOW YOU CAN CONNECT THE USB CABLE / JBV-1 TO YOUR COMPUTER!

Connect power to JBV-1 (11-16V DC) from external power supply, then connect USB

Cable between JBV-1 USB connector and PC.

Windows will detect connected USB cable and detect drivers for new HW.

Follow the instructions and allow Windows to search and install the best drivers available. After this procedure the actual JBV-1 SW update can begin.

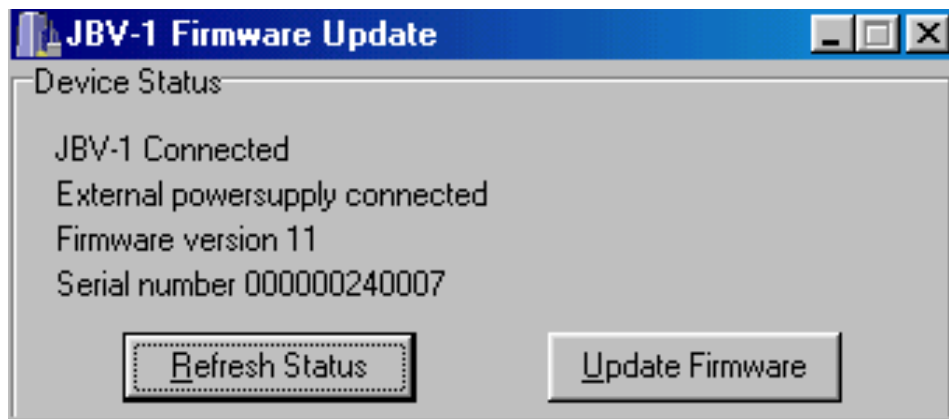


Updating the JBV-1 Docking Station Software

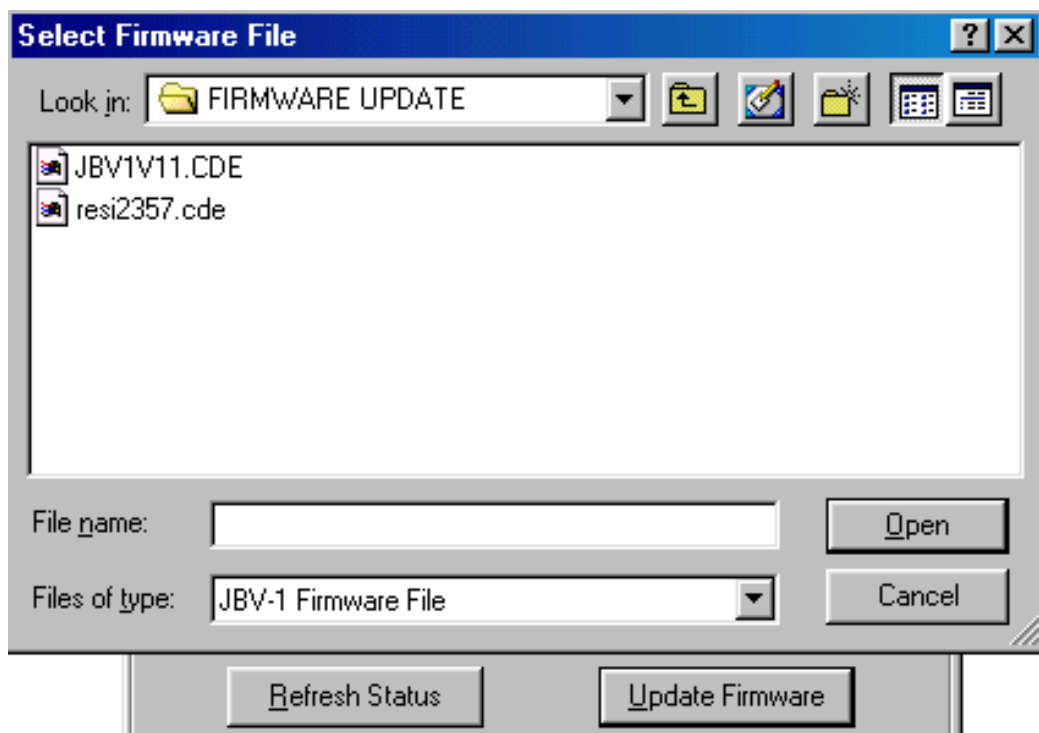
Go to folder *C:\Program Files\Nokia\JBV-1 SW Package\FIRMWARE UPDATE* and start JBV-1 Update SW by double clicking *fwup.exe*.

JBV-1 Firmware update starts and shows current status of the JBV-1 connected.

If firmware version read from your JBV-1 is not the latest one available, it needs to be updated by choosing "Update Firmware".

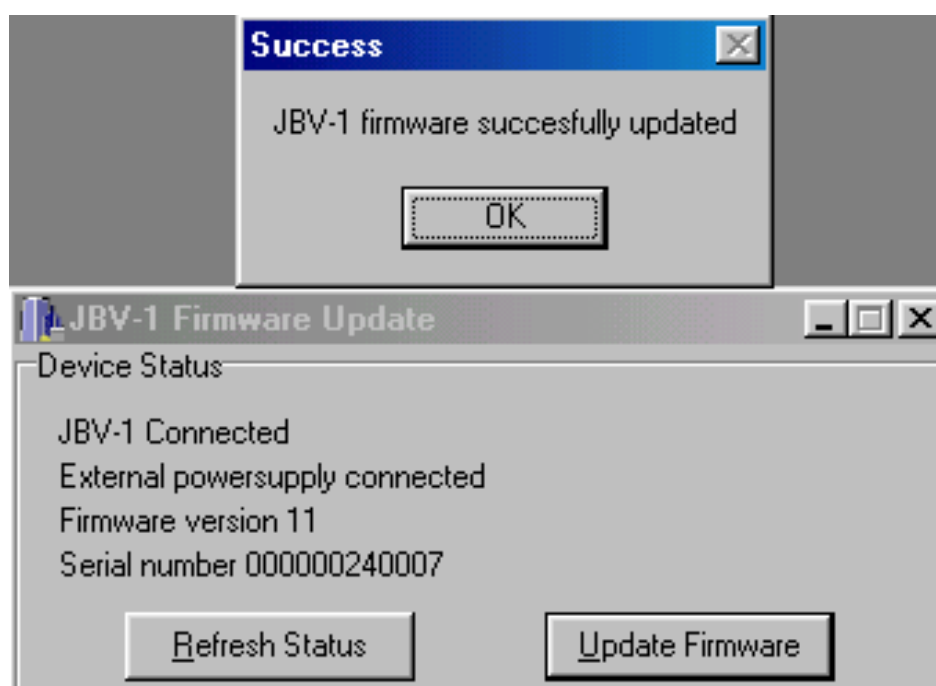


Choose file *JBV1v11.CDE* (example used here is for v 11) and "Open" to update your JBV-1.



After Successful update, current JBV-1 status will be shown. You have now updated the

software of your JBV-1 docking station and it is ready for use.



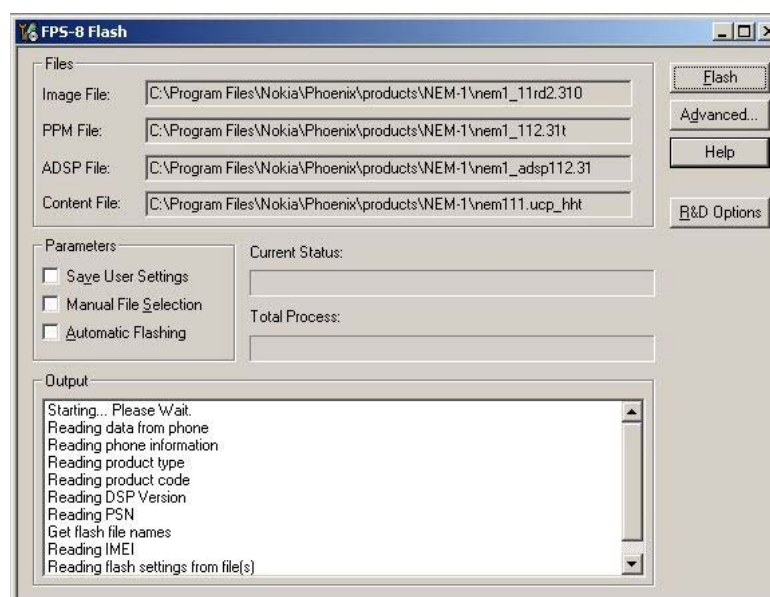
FPS-8/FLS-4S USB driver installation for NEM-X

1. Connect the phone to the FPS8/FLS-4S and to the USB port and switch it on.

NOTICE: If you connect a NEM-X without a MMC card to the PC for the first time, a "USB device" is installed with an error. Ignore this error and press the "Finish" button to close the window.



2. Start Phoenix and initiate the product scan.
3. Select Flashing -> FPS8 Flash. Now the correct Flash window should open. It has an additional file selection for the ADSP file.



4. Press the button "Flash" to start flashing.
5. After a few seconds a windows "Found New Hardware" should popup. It installs the first driver (Nokia ADSP device) automatically.



6. During flashing a second "Found New Hardware" should popup. It installs the second USB driver (Nokia NEM-X) automatically.



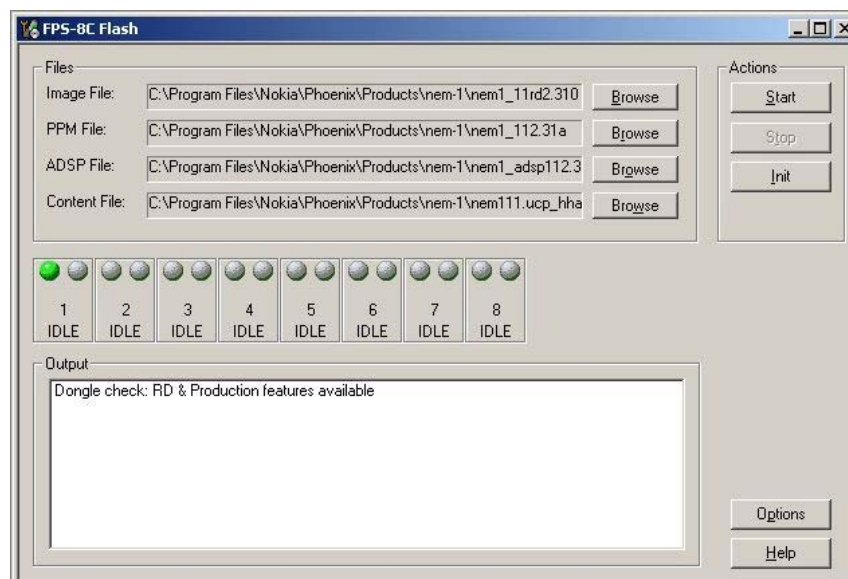
7. Because the USB enumeration takes some time, this flashing sequence could end with a ADSP timeout error. In this case restart flashing.

FPS-8C USB driver installation for NEM-X

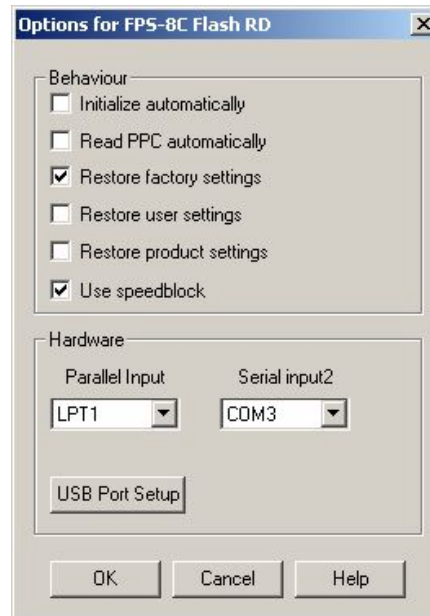
If you will flash for the first time, you have to do the USB setup before. Else the USB flashing won't be working!

NOTICE: To flash files, which added file sizes are together more than 7MB (e.g. NEM-1 V2.30 or higher), your FPS8C card must have 16MB RAM for successful flashing!

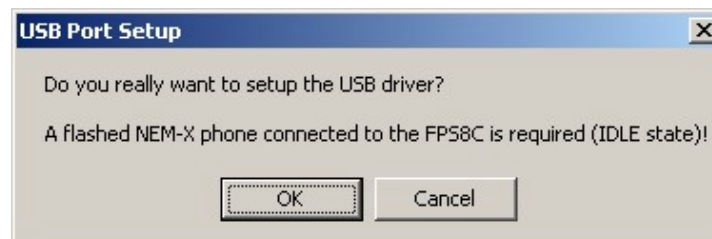
1. Start Phoenix V2003.11.1.9 or newer
2. Select the product: File -> Choose Product -> NEM-1 or NEM-2
3. Open Flashing -> FPS8C Flash (the window must include the additional ADSP file selection)
4. Press "Init" button to bring all FPS8C cards in IDLE state



5. Start Usb Port Setup: Options -> "USB Port Setup"

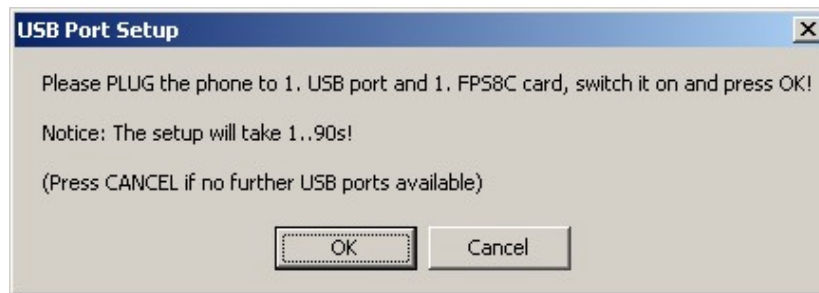


6. The following window is shown:



7. The setup could be done with one phone, which is plugged from the first to the last FPS8C port and USB port. Please mark the USB cable with e.g. it's number to make sure, that it belongs always to the same FPS8C card! Press OK and follow the instructions.

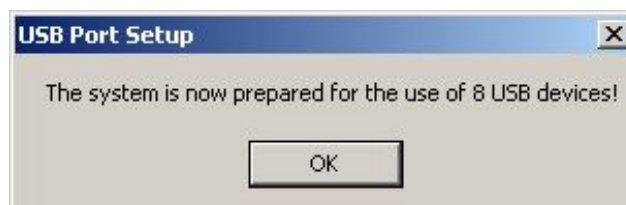
8. The following window is shown:



9. Depending on the used PC, the setup of one port could take 1 to 90 seconds. During USB port setup several "Found New Hardware" should pop up and the driver will be installed. If the port setup succeeded, the next port will be displayed. This sequence repeats until all 8 ports are configured. If an error occurred, the complete setup has to be repeated.



10. If all ports are completed, your system is prepared for the use of normally 8 USB devices.



11. Now select the flash files and press "Start" to begin the flashing.

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Receiver tuning: Quick Guide for Tuning With Phoenix



General remarks

RF tuning steps must be performed in the same order as shown in this document. The order of the corresponding menu items in the Phoenix Service SW may be different.

If baseband tuning is needed, it must be completed before the RF tunings

Avoid unnecessary tuning – factory-tuning values are always the most accurate ones.

Screen shots described in this document may change as the service software is developed.

Kindly refer to the Phoenix help files, the phone model specific service manual and bulletins for help.

Note! All RF tunings for NEM-2 must take place inside JXS-2 RF Shield box! Tuning in the MJ-6 module is not allowed!

Service Tool Concept for RF Tuning Operations

- RF tuning setup must be carried out with JXS-2 and DA-1.
- Power to JBV-1 must be supplied from an external DC power supply, not FPS-8 prommer
- JBV-1 input voltage: Nominal input for RF tuning is +3.9 V DC
- Remember the cable attenuation when setting required RF levels
- DA-1 losses must be taken from the DA-1 label

Note! JBV-1 Docking Station stays outside the box. This is a Rhode&Schwartz CMU Z11 shielded chamber modified to place the dockingadapter inside the box.

Figure 1: Service tools concept



Item:	Type:	Service accessory:	Product code:
1	JBV-1	Docking station	0770298

Item:	Type:	Service accessory:	Product code:
2	DA-1	Docking station adapter	0774288
3	JXS-2	Shield box	0770673
4	XRS-6	RF cable SMA to N-connector	0730231
5	PCS-1	Power cable for JBV-1	0730012
6		SMA to SMA RF cable	
6	PKD-1NS	SW protection key	
7	PKD-1CS	SW protection key	
9		Phoenix service SW	

Automated RF tunings for NEM-2

The recommended tuning of NEM-2 is autotuning.

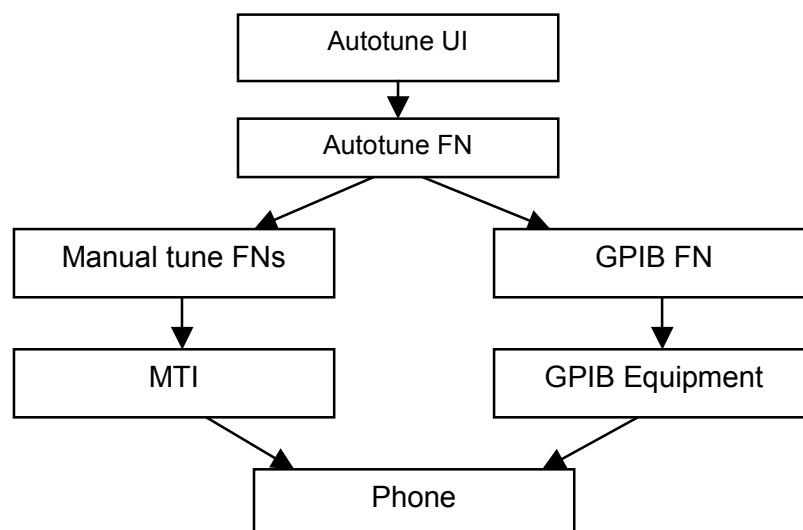
Autotuning as well as all RF tunings must be performed via DA-1 inside JXS-2.

The losses for DA-1 RF coupler can be taken from the DA-1 label. Losses for the RF cables must be added in the "set loss" function of Phoenix.

Autotuning

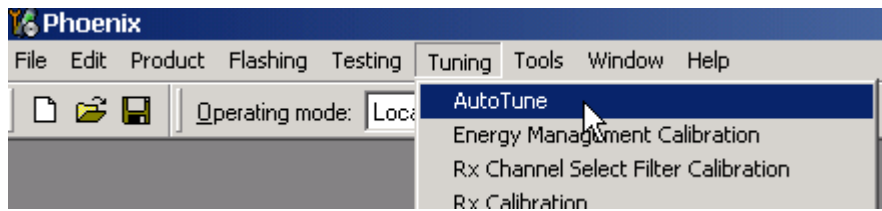
Autotune feature is designed to align product's RF part easier and faster. By this autotune component product is tuned automatically. User needs to press only one button (named 'Tune') and product's RF is tuned and results are shown to the user. Component controls all the needed RF equipment (RF generator and TX measuring device), except power supply.

Following diagram describes how the Autotune component is located in the TSS architecture:



Autotune is a pair of two different components. First is User Interface and another is FunctionAl. UI does not contain any functionality. MTI takes care of phonet messages.

The Autotune component can be found under Tuning menu:



Environment:

Hardware requirements:

PC with Windows 98/2000/NT

Power supply

Product specific module jig

RF-splitter and -cables

RF equipment (only one of each is needed)

Tx:

Agilent E4406 (VSA series transmitter tester)

Agilent E4445 (PSA series transmitter tester)

Rohde&Schwarz, FSE-family of Signal Analyzers

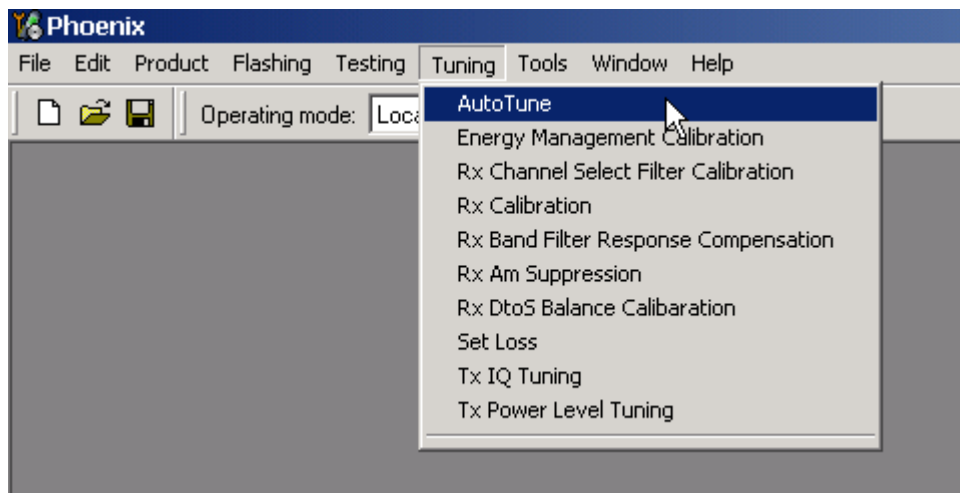
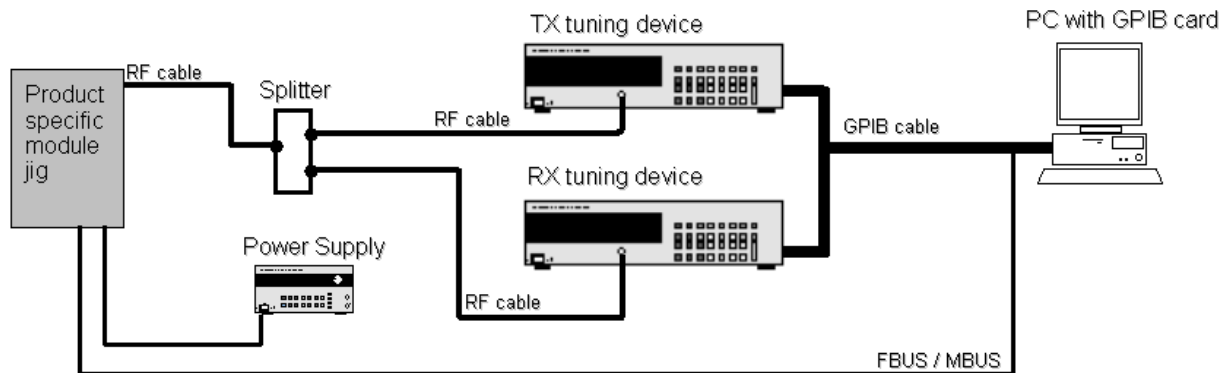
Rohde&Schwarz, FSIQ-family of Signal Analyzers

Rx:

Agilent ESG family of RF Signal Generators

Rohde&Schwarz, SME-family of Signal Generators

or Rohde&Schwarz, CMU 200

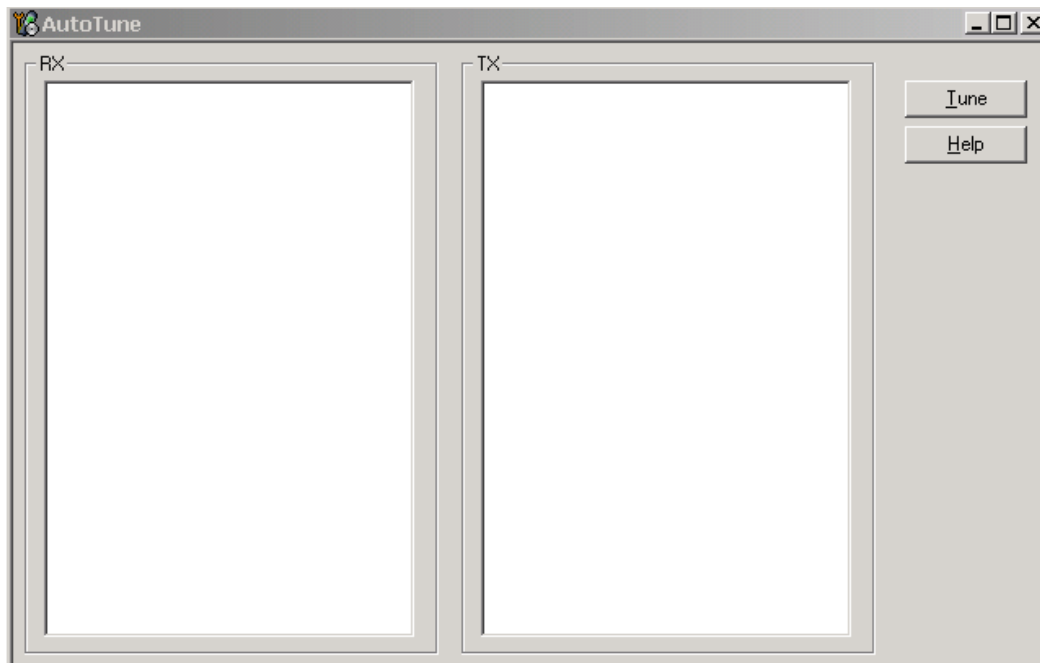


GPIB addresses are not defined. Component finds the addresses and uses them automatically.

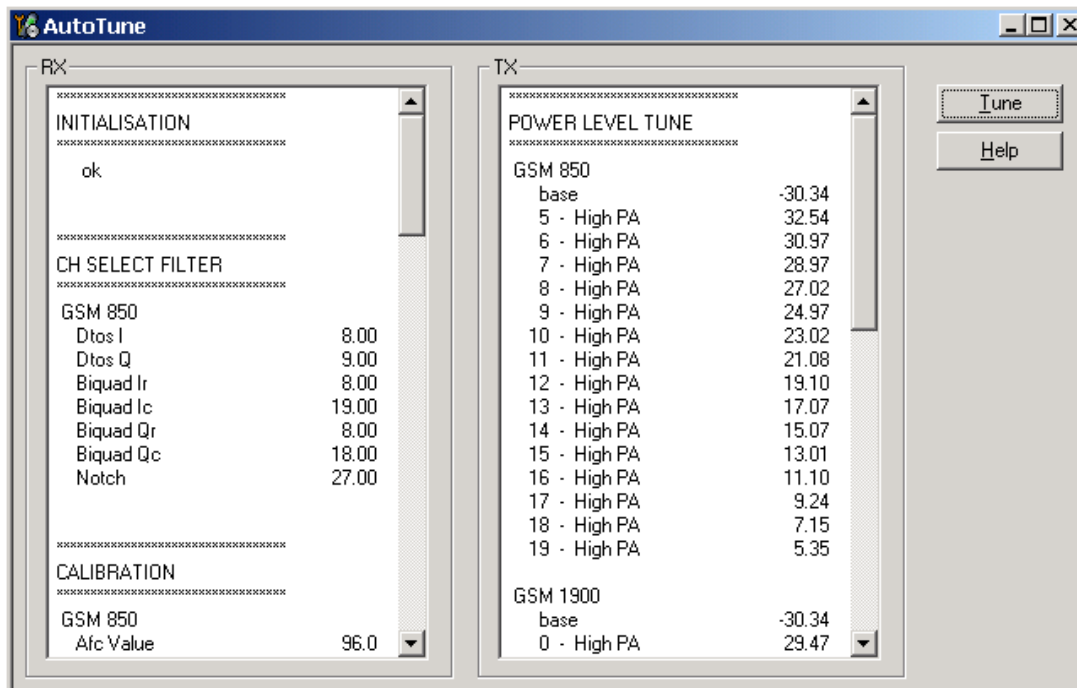
If several TX tuning devices are connected via GPIB bus, this component uses Agilent (VSA or PSA). In RX side, Agilent has highest priority.

Protection

Components are protected by PKD-1CS, PKD-1NS, PKD-1 and PKD-1P dongles using standard TSS protection procedure. Autotuning itself is possible with all those dongles but with PKD-1P and PKD-1 dongles user is not able to set the loss.



Press "Tune" to start the tuning.



Receiver Tuning: RX Channel Select Filter Calibration

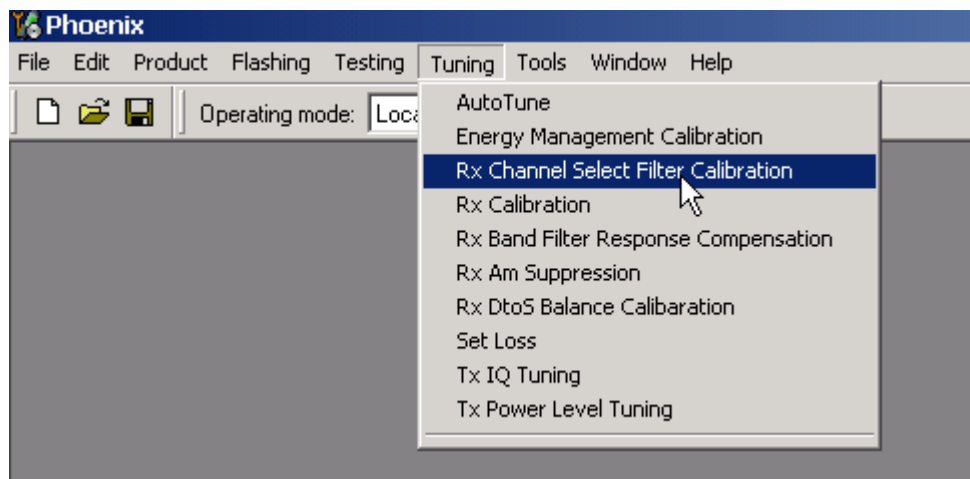
Extra equipment / external RF signal not needed.

Must be done before other RX calibrations.

This function is used to calibrate RX channel select filter in GSM Phones.

Rx Channel select filter is tuned only in one band = Single calibration for both bands.

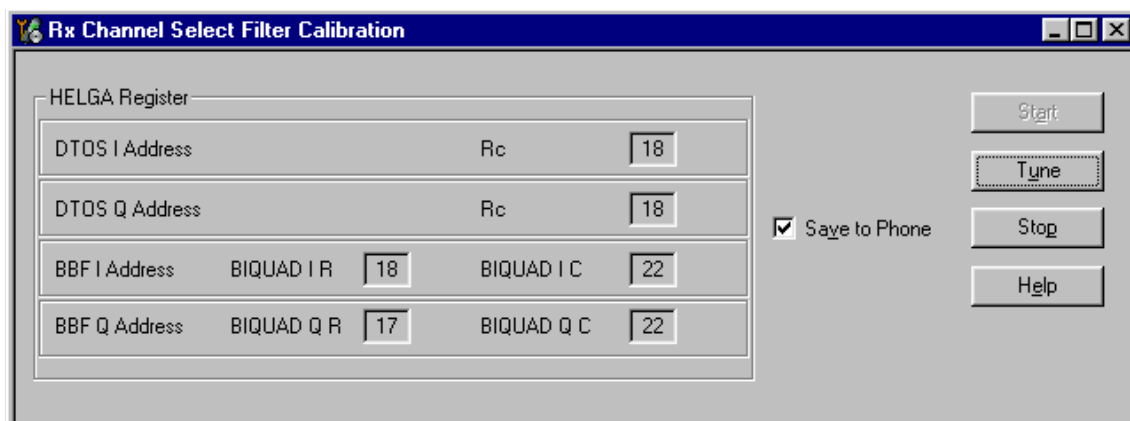
Select Tuning => Rx Channel select filter calibration.



"Save to Phone " is checked by default

Uncheck "Save to Phone " if you don't want the values to be saved to phone (eg testing)!

Press "Tune" to start the tuning



Tuning values must be between 0...31

If values shown are within limits, choose "Stop". Close the "RX Channel Select Filter Calibration" – dialog to end tuning. Close the Rx Channel select filter calibration – dialog, the values are saved to phone.

RX Calibration

RF generator needed.

This tuning performs RX Calibration.

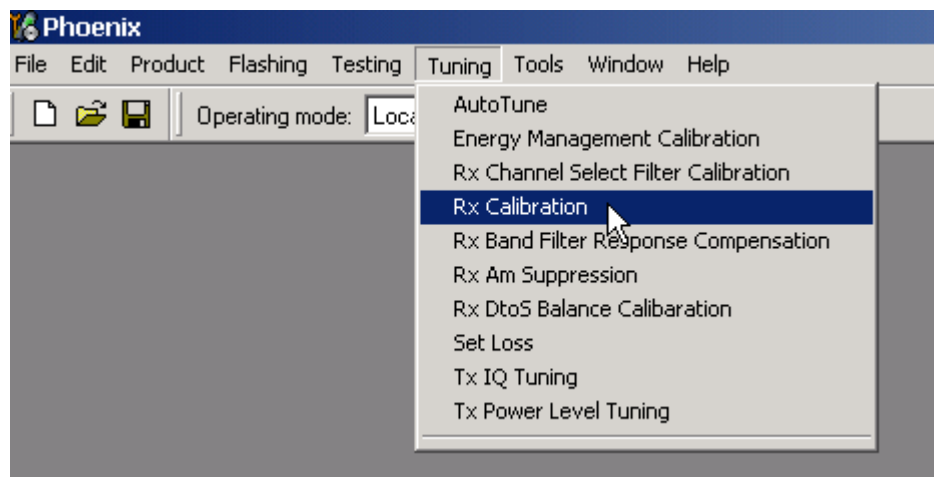
Must be done separately on each band!

Calibration is automatically performed first at GSM850 and then at GSM1900 band. If tuning is successful, tuning continues in the next band.

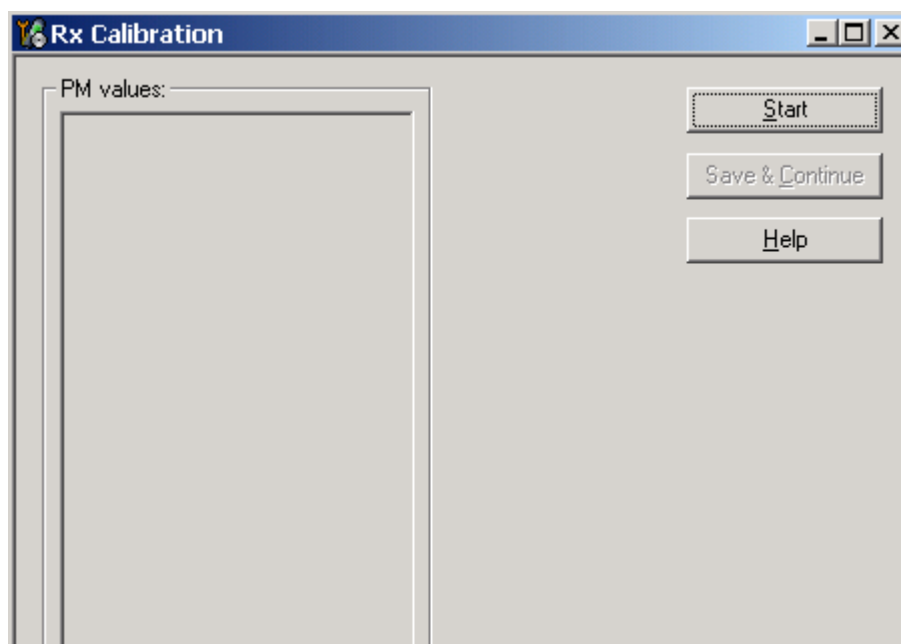
AFC tuning is done while GSM850 band RX Calibration is performed.

Remember to take jig and cable attenuations into account!

Select Tuning => Rx calibration

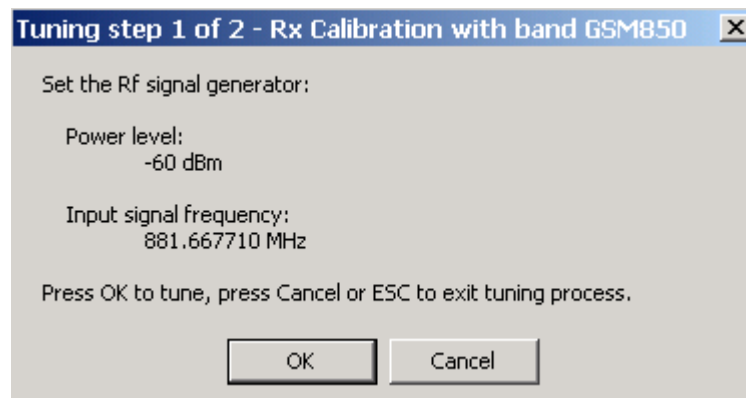


Press "Start" to start tuning.



Set RF generator to required GSM850 frequency => OK

Set RF generator to required frequency => OK

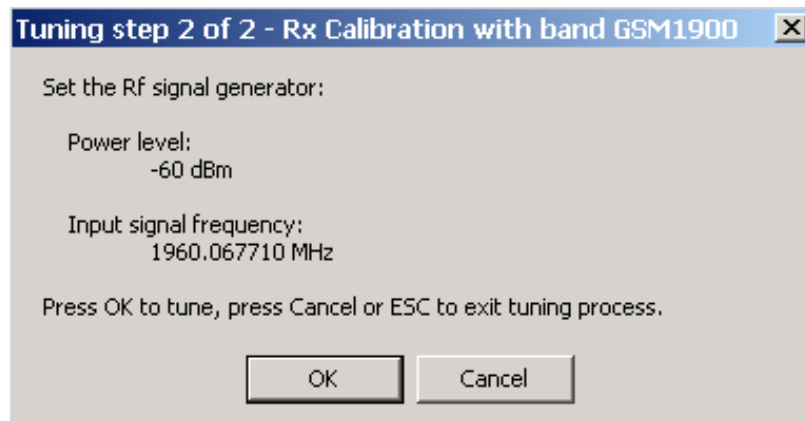


Tuning values and ADC readings are shown.

Typical values and limits in (GSM850) RX Calibration:

GSM850	Typical value	Low limit	High limit
Afc value:	-90	-350	350
Afc slope:	130	50	350
Rssi 0:	66	50	80
Rssi 1:	72	56	86
Rssi 2:	78	62	92
Rssi 3:	84	68	98
Rssi 4:	90	74	104
Rssi 5:	95	80	110
Rssi 6:	101	86	116
Rssi 7:	107	92	122
Rssi 8:	113	98	128
Rssi 9:	119	104	134
Rssi 10:	125	110	140
Rssi 11:	131	116	146
Rssi 12:	137	122	152
Rssi 13:	143	128	158
Rssi 14:	149	134	164

Set RFgenerator to required GSM1900 frequency => OK



Tuning values and ADC readings are shown.

Typical values and limits in (GSM1900) RX Calibration

GSM1900	Typical value	Low limit	High limit
Rssi 0:	63	47	77
Rssi 1:	69	53	83
Rssi 2:	75	59	89
Rssi 3:	81	65	95
Rssi 4:	87	71	101
Rssi 5:	94	77	107
Rssi 6:	100	83	113
Rssi 7:	106	89	119
Rssi 8:	112	95	125
Rssi 9:	118	101	131
Rssi 10:	124	107	137
Rssi 11:	130	113	143
Rssi 12:	136	119	149
Rssi 13:	142	125	155
Rssi 14:	148	131	161

RX Band Filter Response Compensation

RF generator needed.

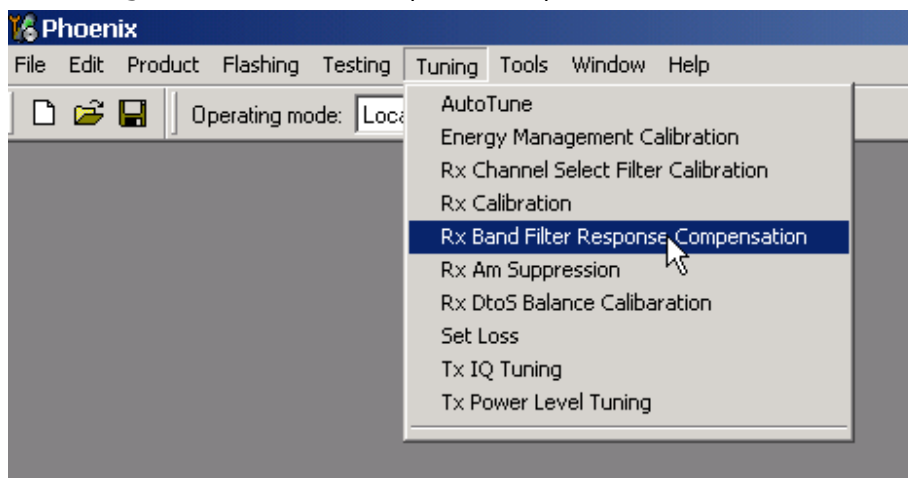
This operation must be done separately on each band!

Calibration is made automatically, starting with GSM850 and then with GSM1900..

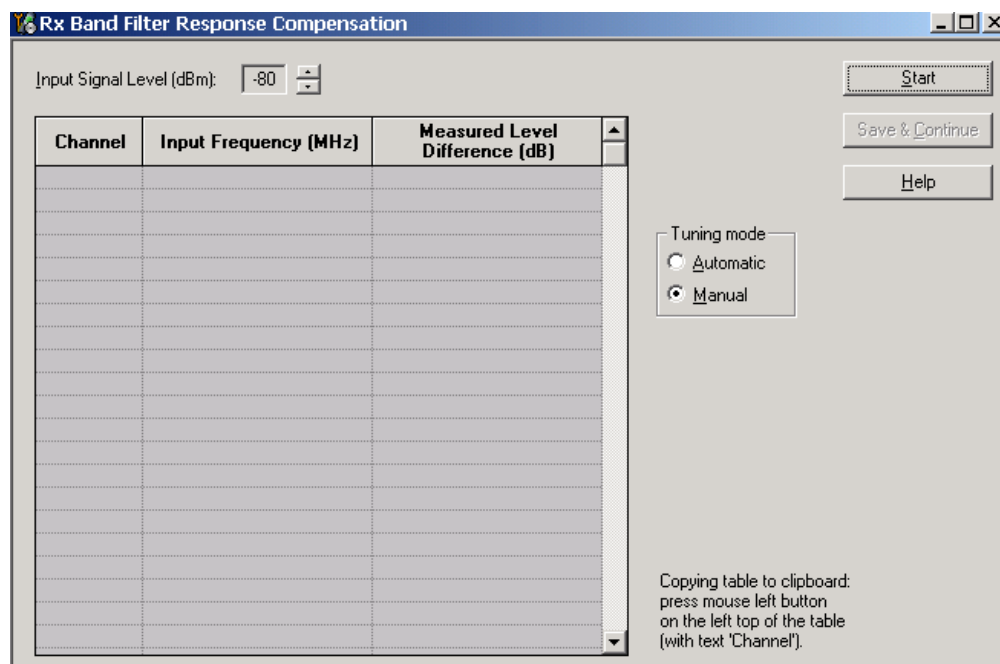
NOTE! Remember to do RX calibration before doing Rx Band Filter Response Compensation!

Remember to take jig and cable attenuations into account!

Select Tuning => Rx band filter response compensation



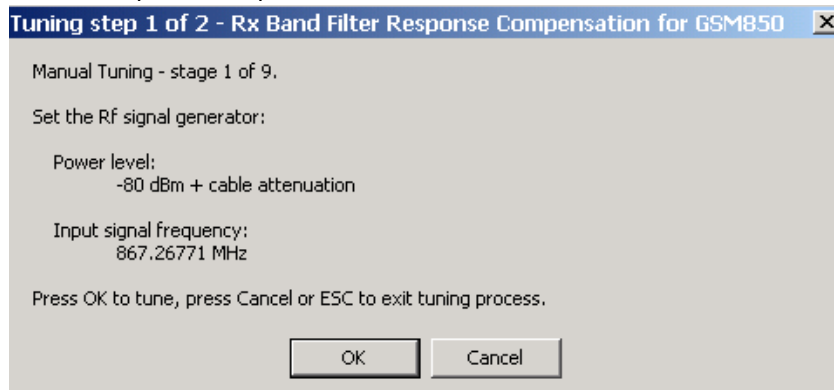
Select "Manual tuning" and press "Start" to start the tuning process.



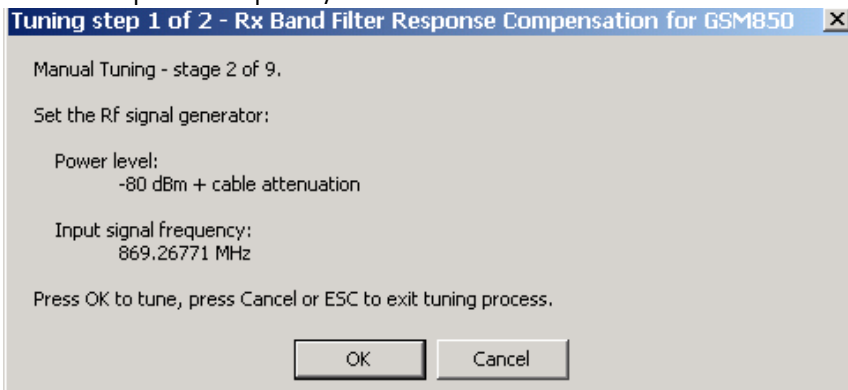
You are asked to supply 9 different RF frequencies to the phone.

The tuning begins from GSM850 band and continues the same way for GSM1900 band

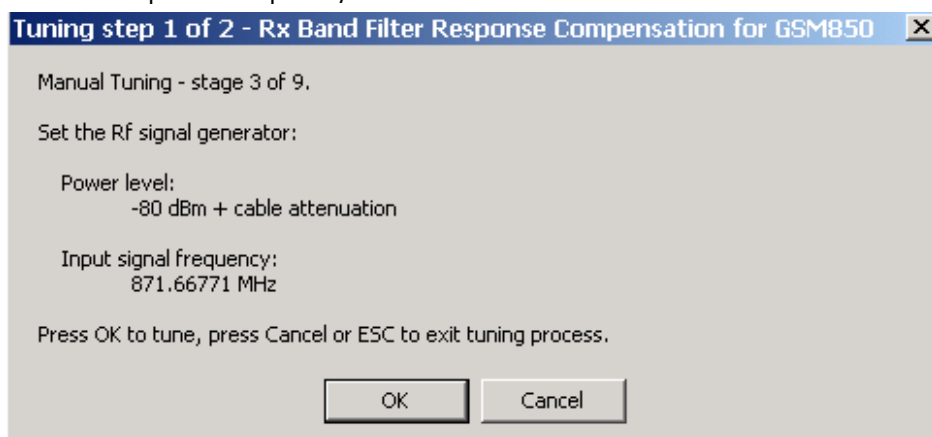
Set the first required frequency and level => OK



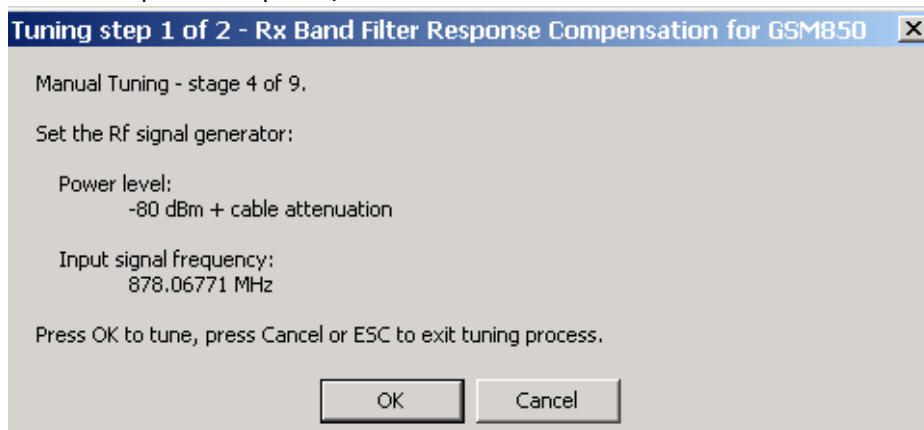
Set the 2nd required frequency and level => OK



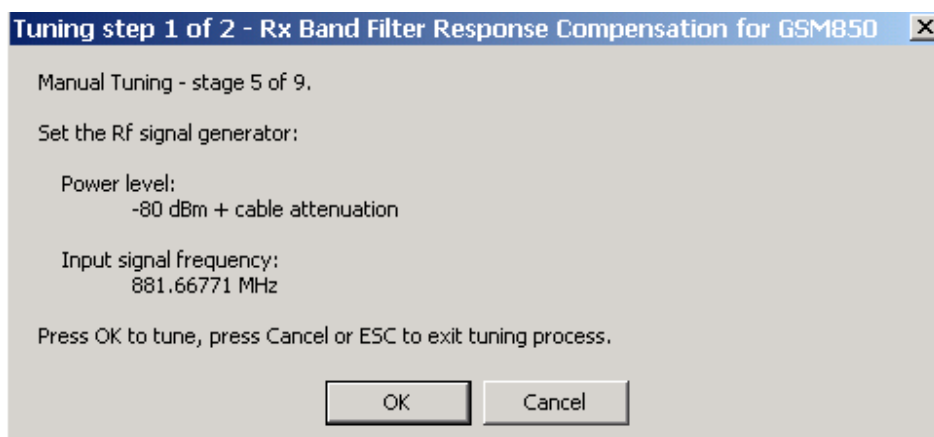
Set the 3rd required frequency and level => OK



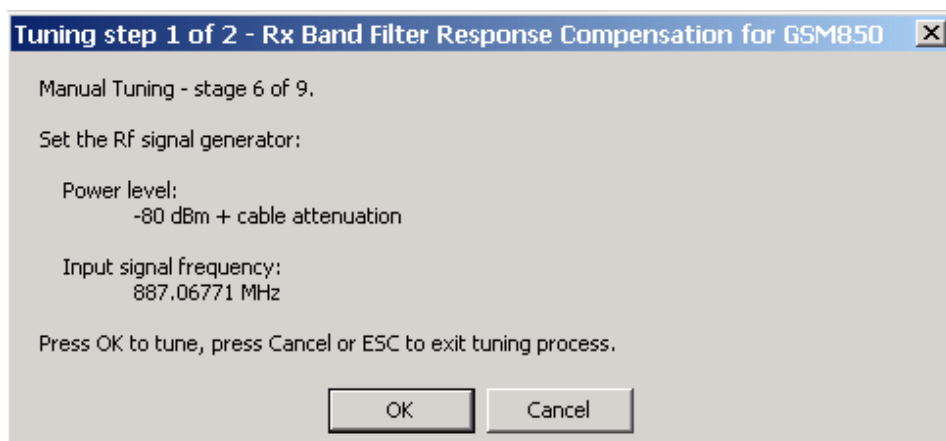
Set the 4th required frequency and level => OK



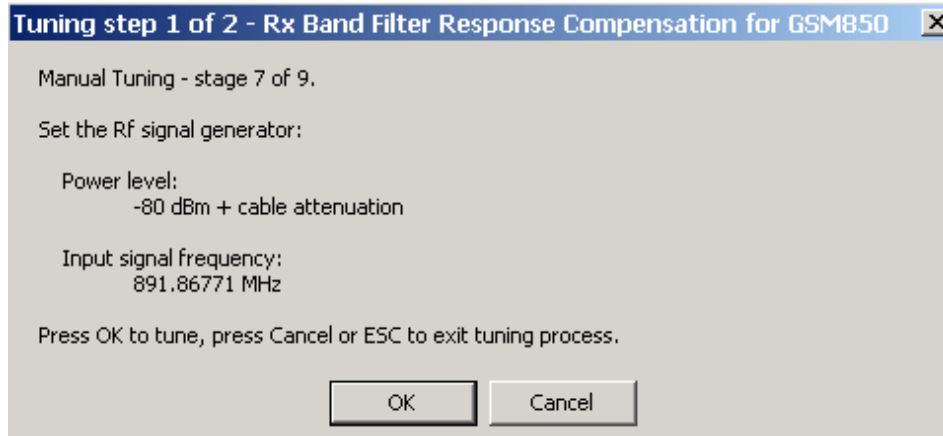
Set the 5th required frequency and level => OK



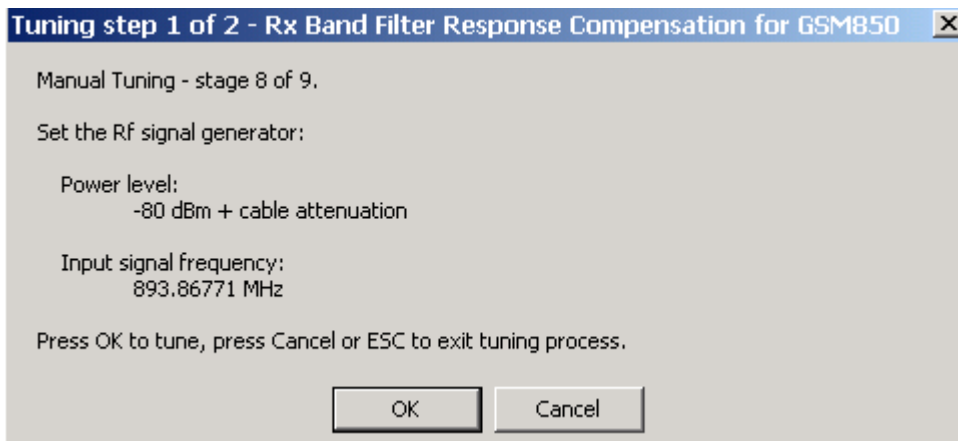
Set the 6th required frequency and level => OK



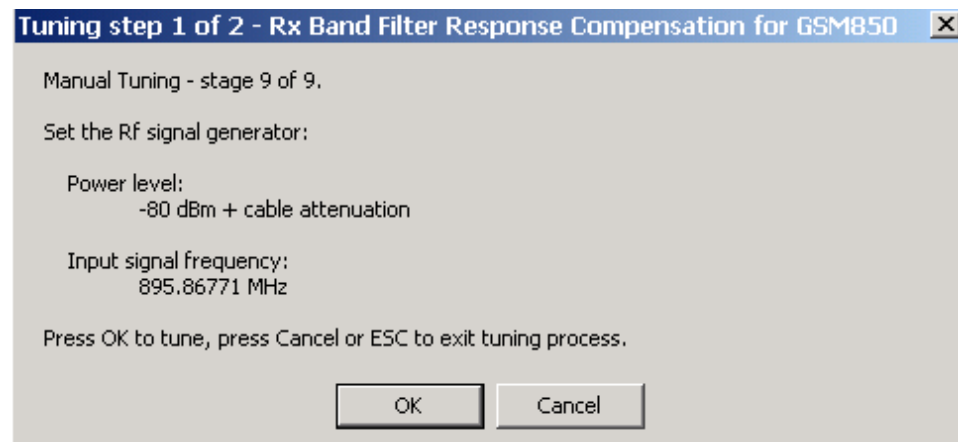
Set the 7th required frequency and level => OK

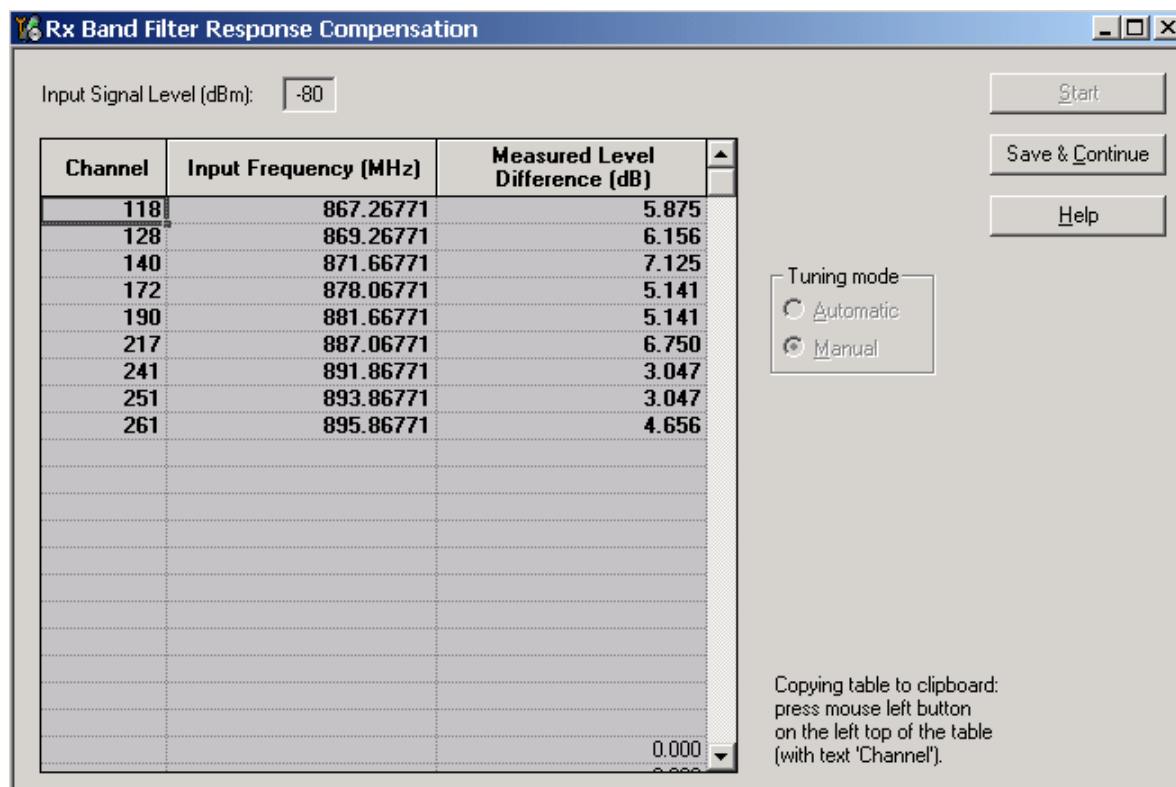


Set the the 8th required frequency and level => OK



Set 9th required frequency and level => OK



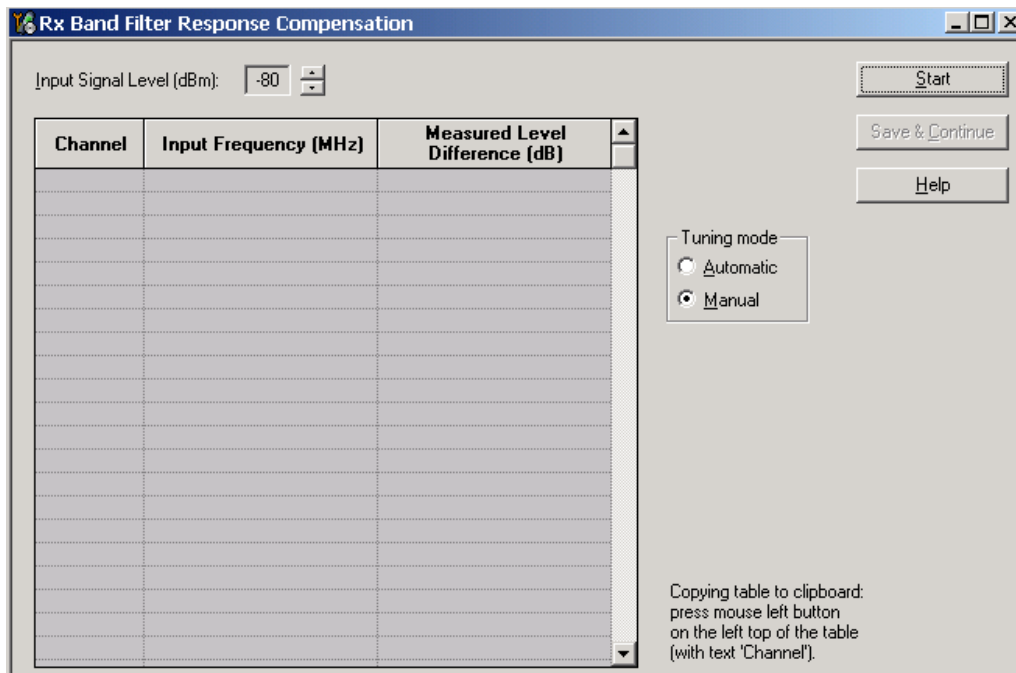


Typical values and limits in Rx Band Filter Response Compensation GSM850:

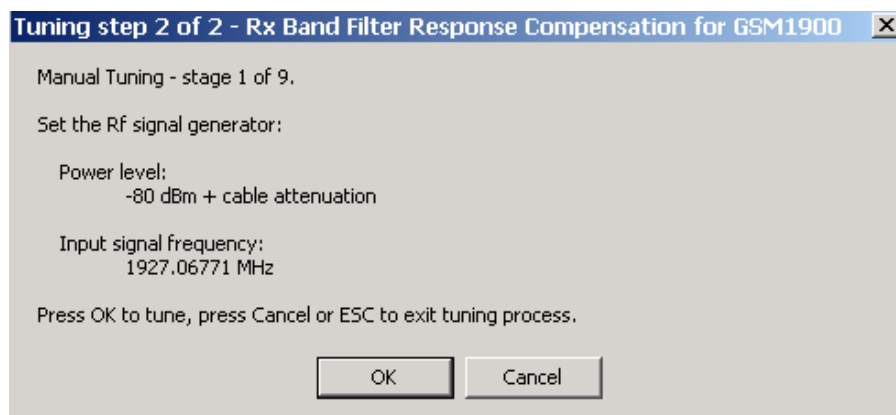
Channel	Input frequency (MHz)	Typ.	Low limit (dB)	High limit (dB)
118	867.26771	-1.266	-10	3.5
128	869.26771	-0.641	-3.5	3.5
140	871.66771	-0.188	-3.5	3.5
172	878.06771	-0.094	-3.5	3.5
190	881.66771	-0.188	-1	1
217	887.06771	-0.391	-3.5	3.5
241	891.86771	-0.266	-3.5	3.5
251	893.86771	-0.359	-3.5	3.5
261	895.26771	-0.453	-10	3.5

Press "Save and Continue" to continue with 1900MHz band.

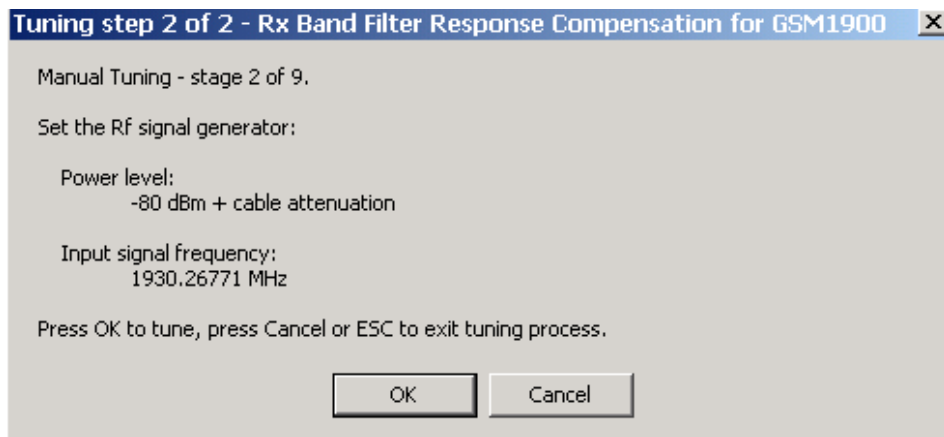
Repeat the same steps as for the GSM850 band above.



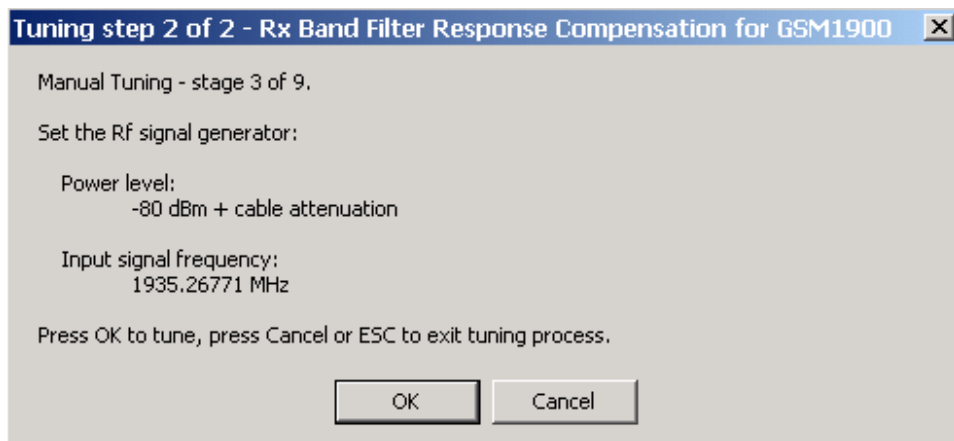
Set the first required frequency and level => OK



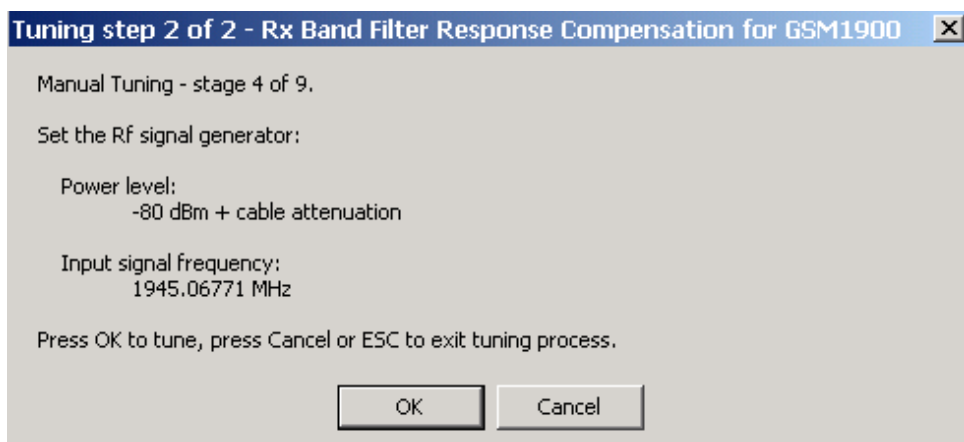
Set the 2nd required frequency and level => OK



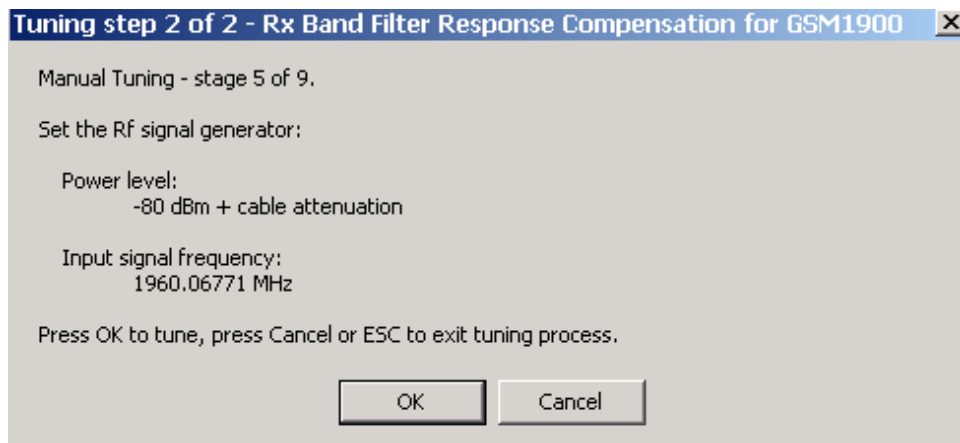
Set the 3rd required frequency and level => OK



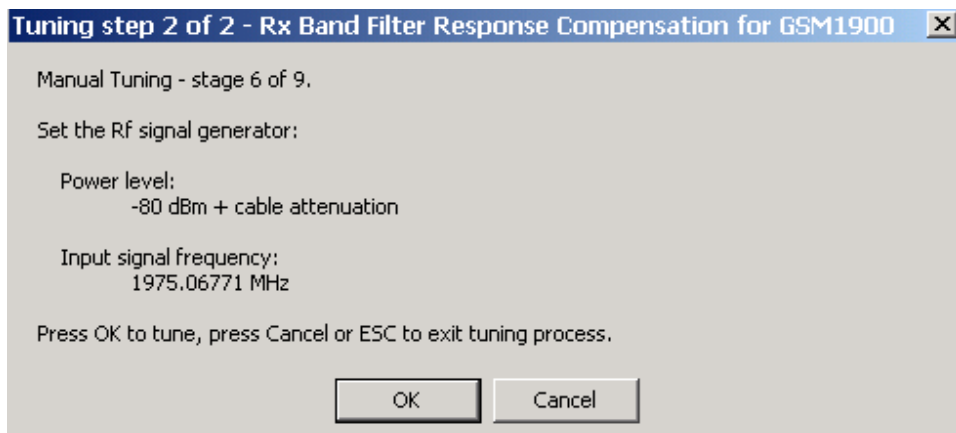
Set the 4th required frequency and level => OK



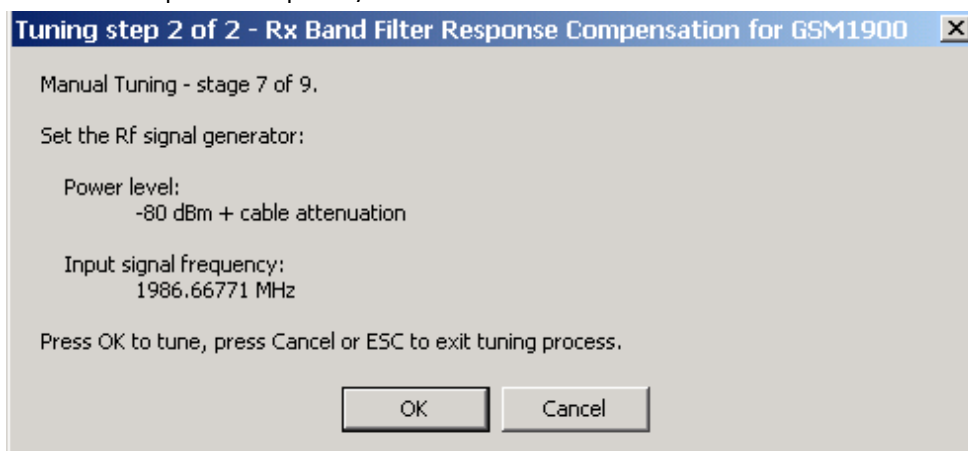
Set the 5th required frequency and level => OK



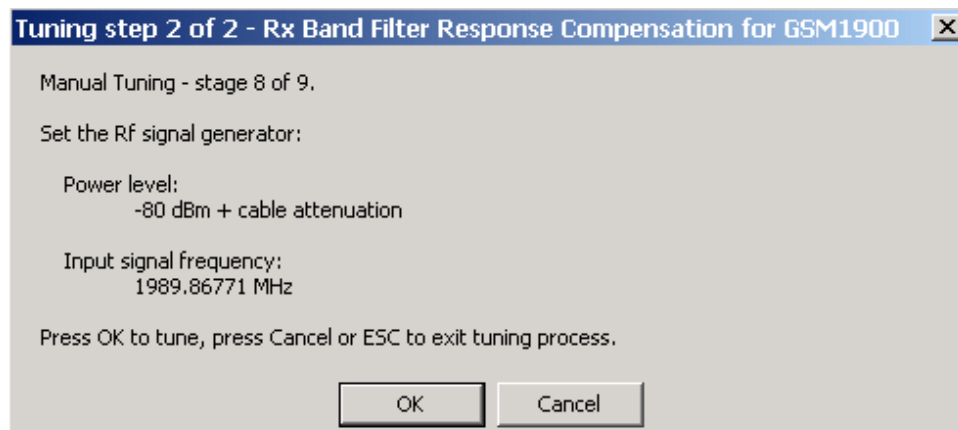
Set the 6th required frequency and level => OK



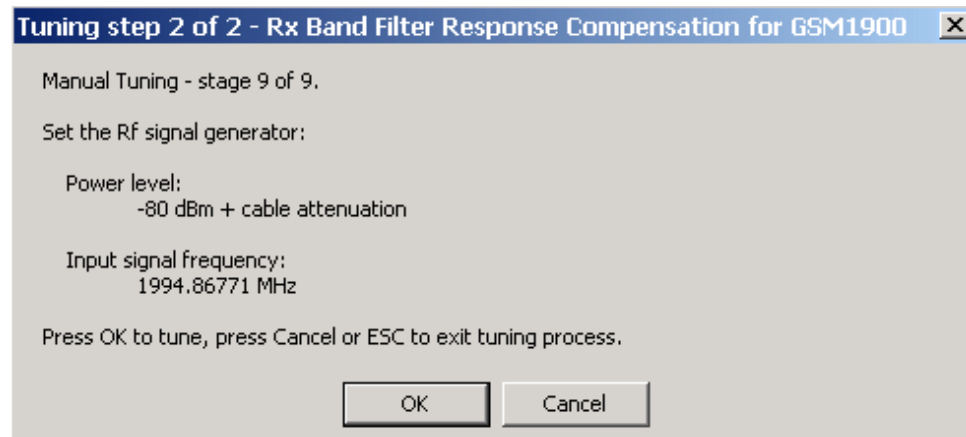
Set the 7th required frequency and level => OK

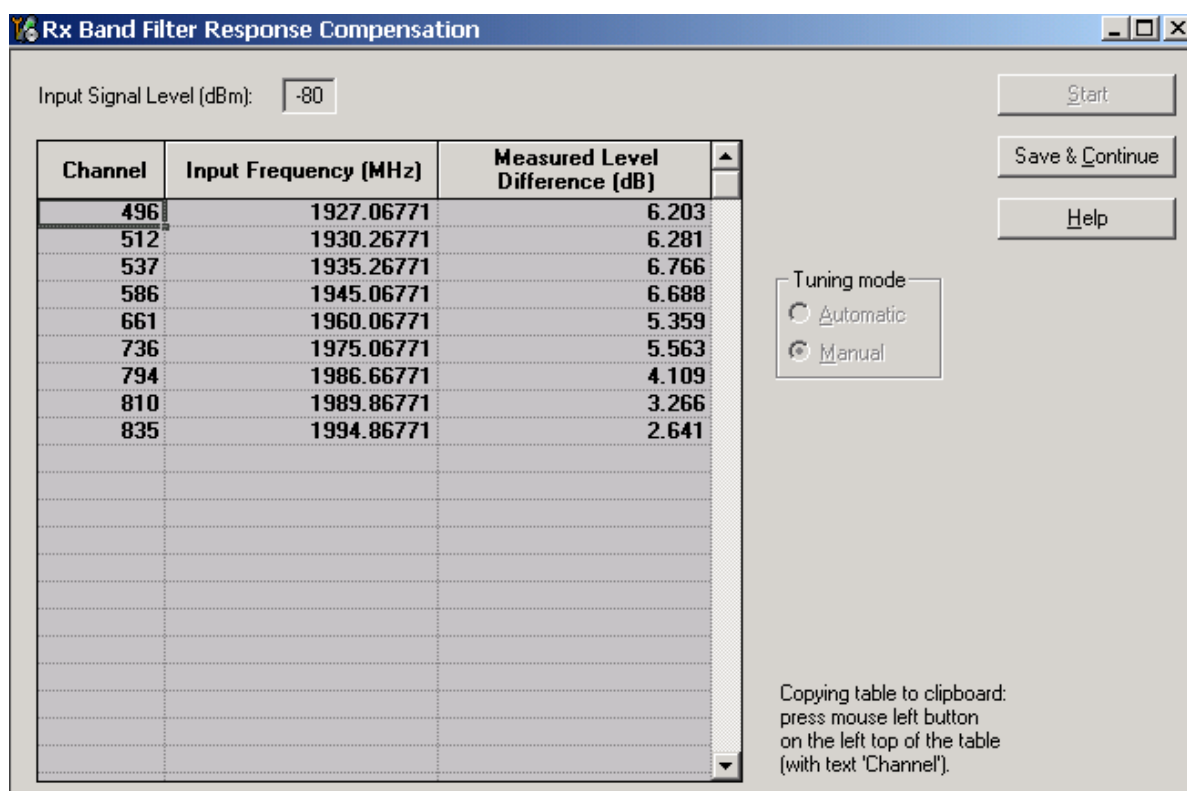


Set the 8th required frequency and level => OK



Set the 9th required frequency and level => OK

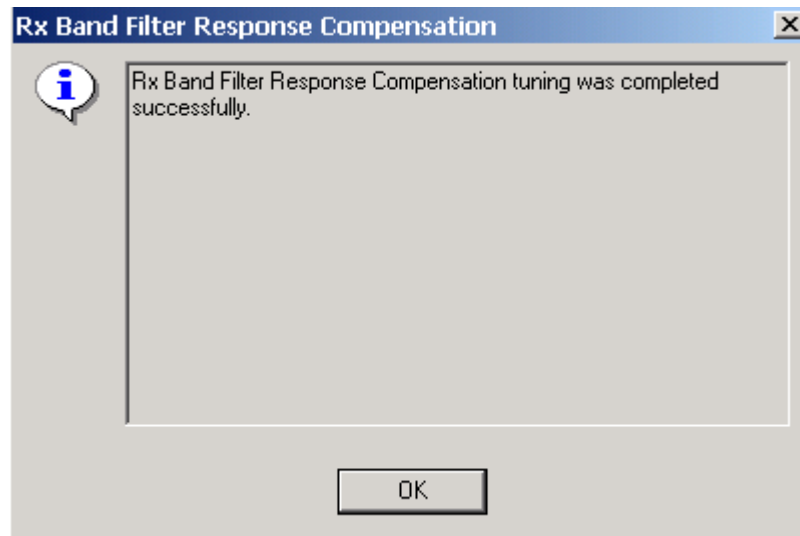




Typical values and limits in Rx Band Filter Response Compensation GSM1900:

Channel	Input frequency (MHz)	Typ.	Low limit (dB)	High limit (dB)
495	1927.06771	-0.25	-10	3.5
512	1930.26771	0.73	-3.5	3.5
537	1935.26771	1.05	-3.5	3.5
585	1945.06771	0.74	-3.5	3.5
661	1960.06771	0.02	-1	1
736	1975.06771	0.65	-3.5	3.5
794	1986.66771	-0.52	-3.5	3.5
810	1989.86771	-1.07	-3.5	3.5
835	1994.86771	-1.45	-10	3.5

Press "Save and continue" to end the tuning process. The following message appears:



Transmitter tuning

TX Power Level Tuning

Power Meter (or Spectrum analyzer) needed

With Tx Power Level Tuning, the coefficients are adjusted for each power level

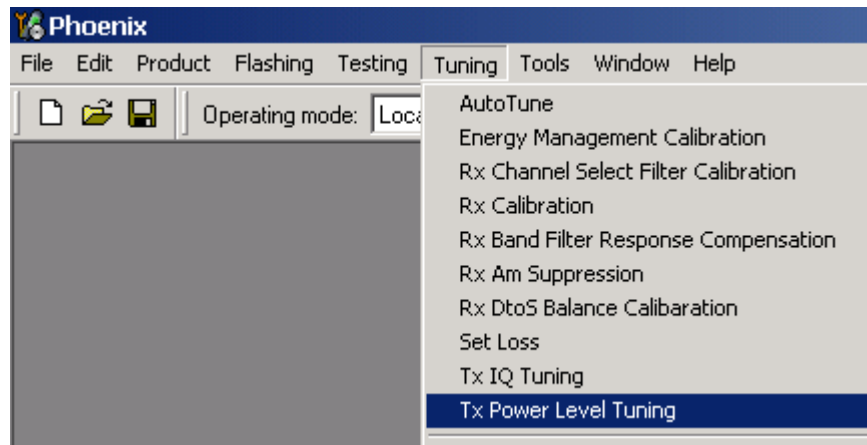
Must be done separately on all bands!

Start Power Level tuning at GSM850, then continue at GSM1900 band.

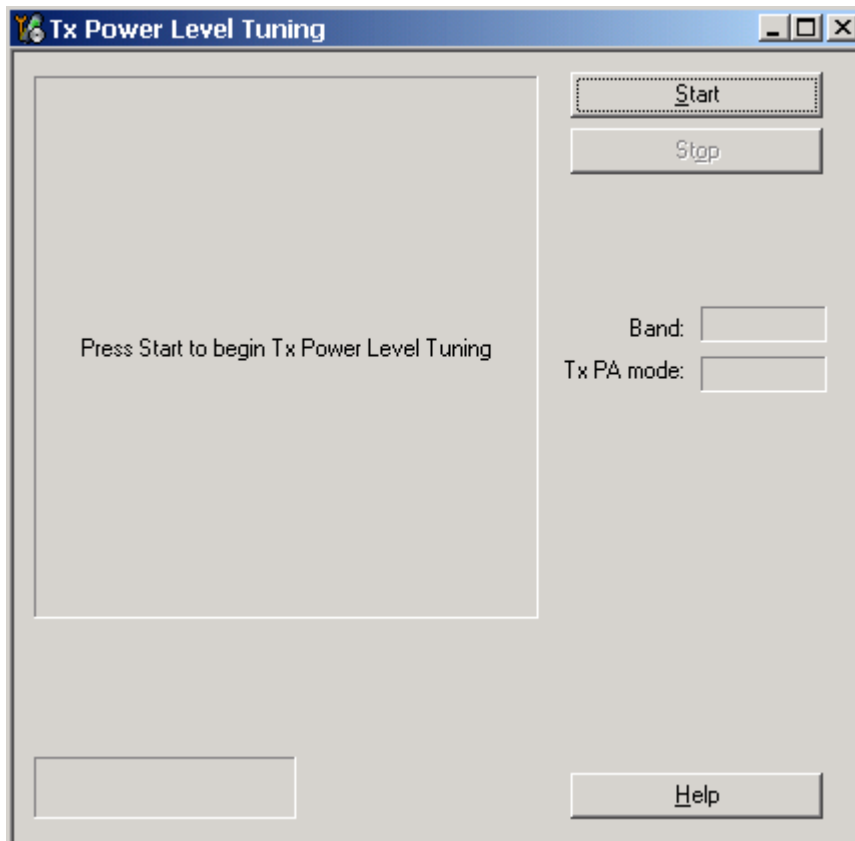
In GSM850 and GSM1900 bands the power level tuning is made only for high PA mode.

Tuning => Tx power level tuning

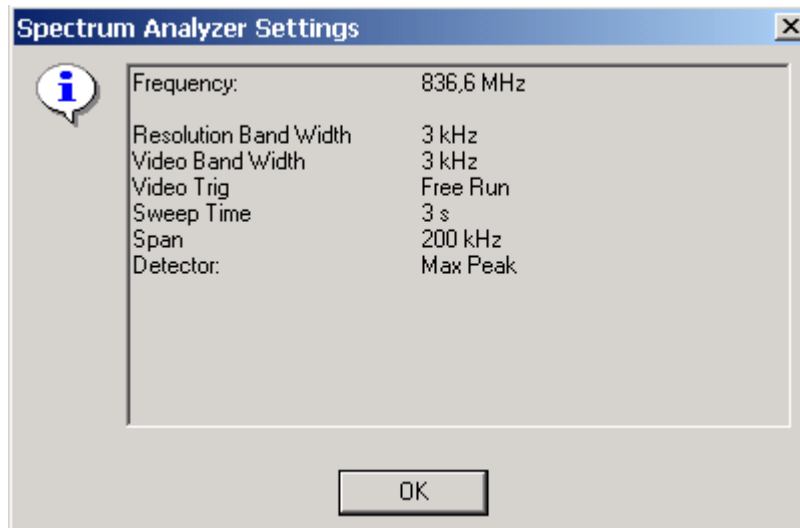
Remember to take the jig and cable attenuations into account!



Select "Start", tuning begins automatically from the GSM850 band



Make the required adjustments of the spectrum analyzer as shown on the picture and press "OK"..



The coefficient table lists the power level, coefficient, target dBm and DAC value for each power level.

The tuned power level can be chosen by using up and down arrows or mouse.

The current power level is shown with inverse colors.

The tuning value can be adjusted with "-" and "+" keys

GSM850: Tune base level and power levels 19,15 and 5 to target level .

	Coefficient	Target dBm
5	0.6941	32.5
6	0.5757	31.0
7	0.4834	29.0
8	0.4111	27.0
9	0.3540	25.0
10	0.3086	23.0
11	0.2724	21.0
12	0.2435	19.0
13	0.2204	17.0
14	0.2019	15.0
15	0.1874	13.0
16	0.1760	11.0
17	0.1675	9.0
18	0.1613	7.0
19	0.1574	5.0
Base	0.1339	-30.0
Test	0.1339	

Start

Save & Continue

Band: GSM 850

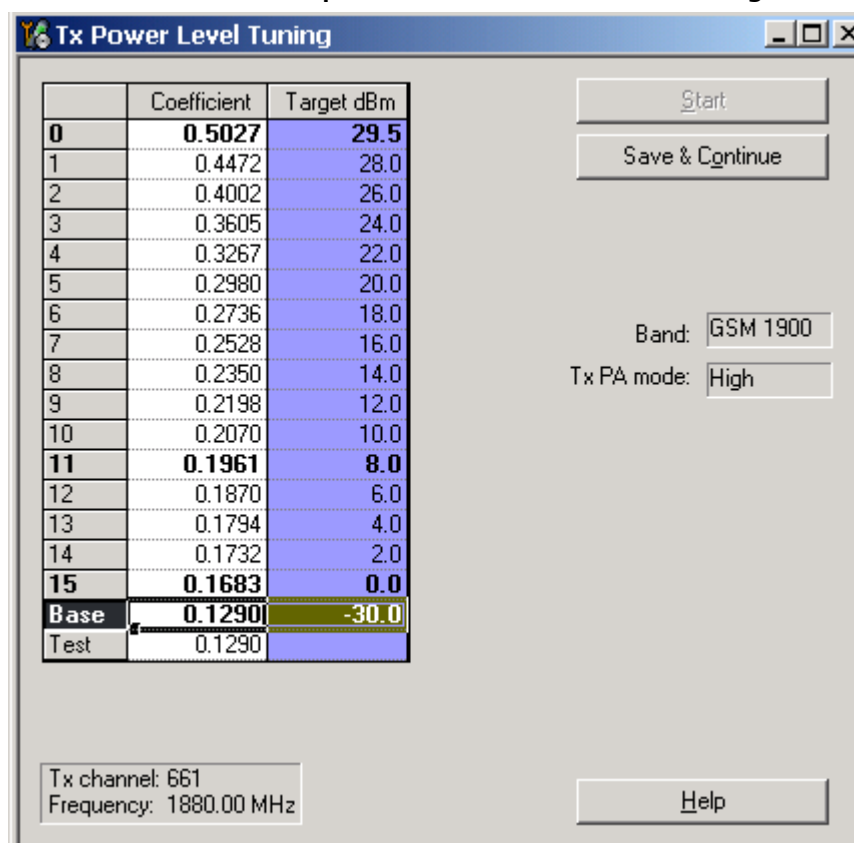
Tx PA mode: High

Tx channel: 190
Frequency: 836.60 MHz

Help

Press "Save and Continue" to go to the next band.

GSM1900: tune base level and power levels 15, 11 and 0 to target level.



The 'Tx Power Level Tuning' dialog box contains a table with three columns: an index, a coefficient, and a target dBm value. The table lists coefficients for levels 0 through 15, with a 'Base' level and a 'Test' level. To the right of the table are buttons for 'Start', 'Save & Continue', and 'Help'. Below the table, it shows 'Tx channel: 661' and 'Frequency: 1880.00 MHz'. On the right side, there are dropdown menus for 'Band: GSM 1900' and 'Tx PA mode: High'.

	Coefficient	Target dBm
0	0.5027	29.5
1	0.4472	28.0
2	0.4002	26.0
3	0.3605	24.0
4	0.3267	22.0
5	0.2980	20.0
6	0.2736	18.0
7	0.2528	16.0
8	0.2350	14.0
9	0.2198	12.0
10	0.2070	10.0
11	0.1961	8.0
12	0.1870	6.0
13	0.1794	4.0
14	0.1732	2.0
15	0.1683	0.0
Base	0.1290	-30.0
Test	0.1290	

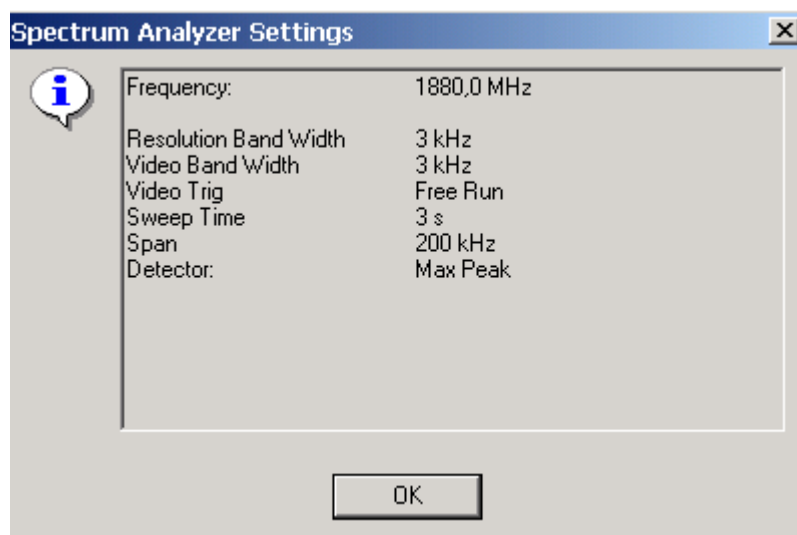
Start
Save & Continue

Band: GSM 1900
Tx PA mode: High

Tx channel: 661
Frequency: 1880.00 MHz

Help

Change the adjustments of the spectrum analyzer as shown on the picture and press "OK".



The 'Spectrum Analyzer Settings' dialog box displays various configuration parameters for the spectrum analyzer. The settings are as follows:

Frequency:	1880,0 MHz
Resolution Band Width	3 kHz
Video Band Width	3 kHz
Video Trig	Free Run
Sweep Time	3 s
Span	200 kHz
Detector:	Max Peak

OK

Typical values: GSM850

Power level	PA high mode
5	0.6- 0.9
7	-
15	0.2 - 0.25
19	0.13- 0.18
Base	0.1- 0.15

Adjust the power levels if needed by using the "-" and "+" keys.

Typical values: GSM1900

Power level	PA high mode
0	0.55- 0.75
11	0.2- 0.3
15	0.15 - 0.2
Base	0.1- 0.15

Adjust the power levels as with GSM850.

Finally press "Save and Continue" to end the tuning process.

TX I/Q Tuning

Spectrum analyzer needed

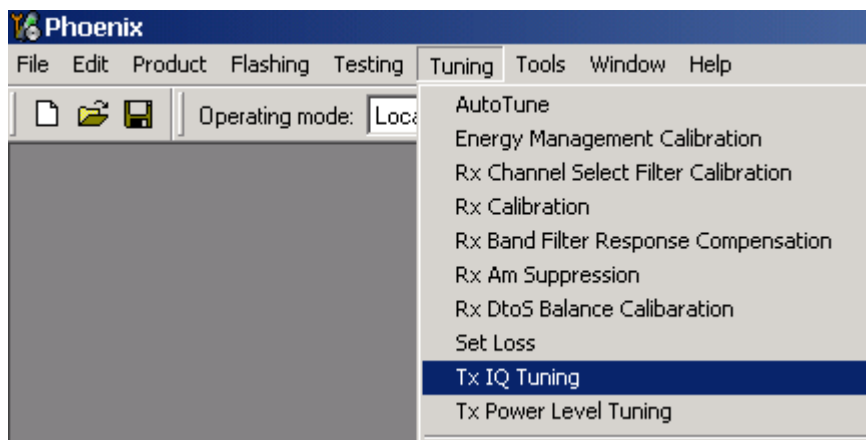
Tx IQ Tuning allows changing the Tx I DC Offset, Tx Q DC Offset, Amplitude difference and Phase difference

Must be done separately on each band!

Changing from 850 to 1900 is made automatically.

Remember to take jig and cable attenuations into account!

Select Tuning => Tx_IQTuning



The tuning is done by setting each of the sliders to desired value.

The sliders can be changed only when the tuning is ongoing.

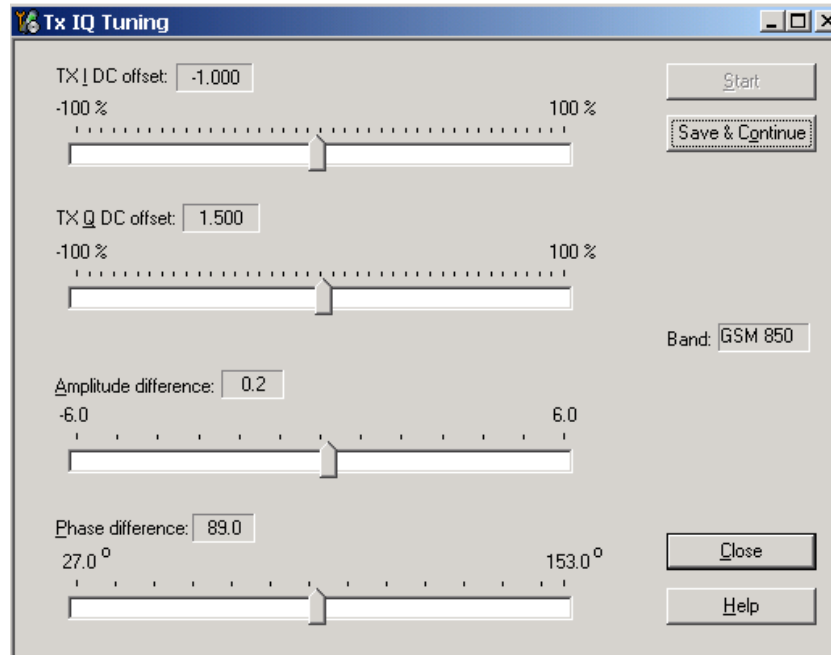
The order of tuning should be same as the order of the sliders e.g. the Tx I DC Offset is tuned first and Phase difference is tuned last.

Use <= , =>, PgUp or PgDn keys

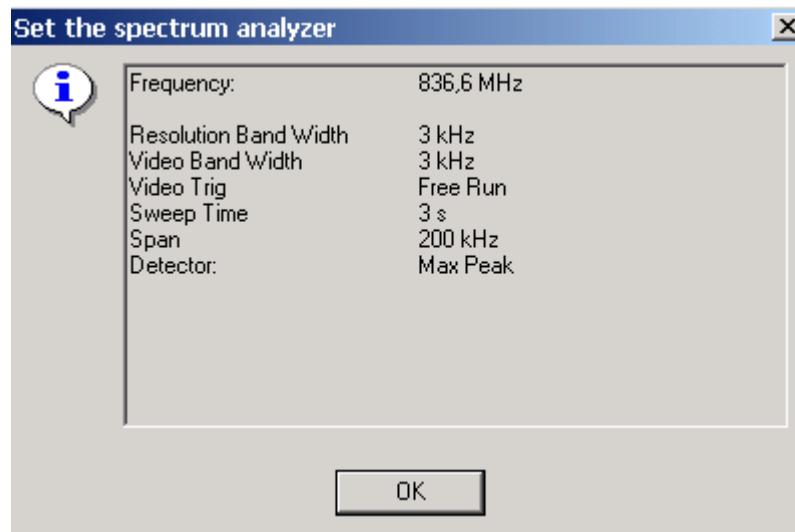
Tx IQ Tuning limits are the same for all bands GSM850 and GSM1900:

Tuning limits:	
I DC Offset	-6...+6
Q DC Offset	-6...+6
Amplitude difference	-1...+1
Phase difference	- 80°...100°

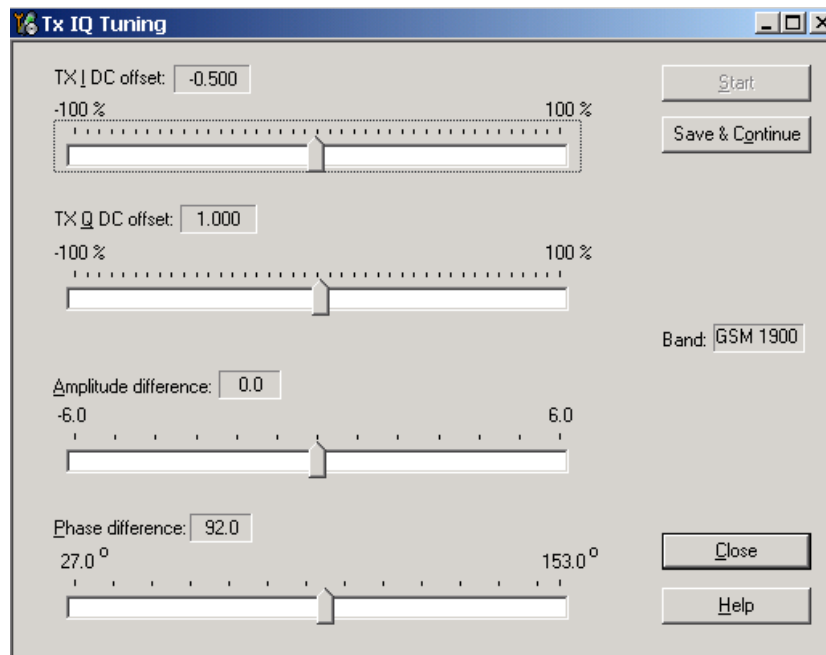
Tuning starts at the GSM850 band automatically when you press "Start". Move the sliders to reach values within specified limits



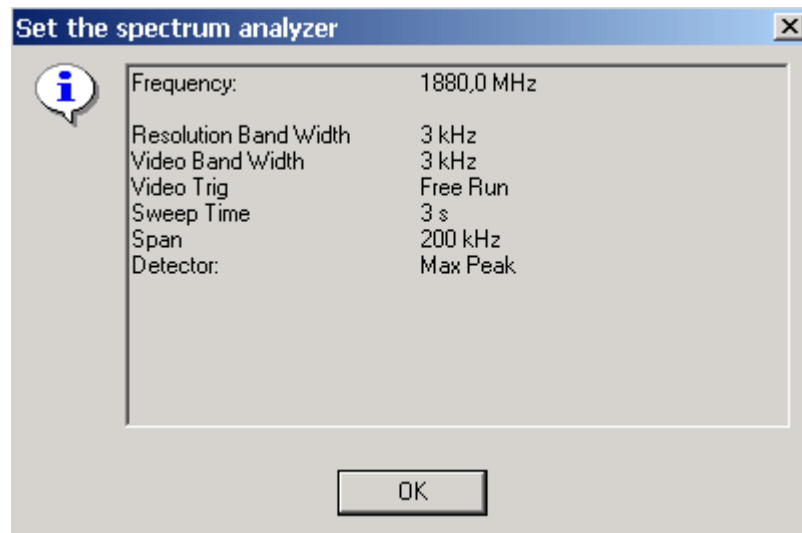
Make the required adjustments of the spectrum analyzer as shown in the picture:



Press "Save and Continue" to go to the next band..



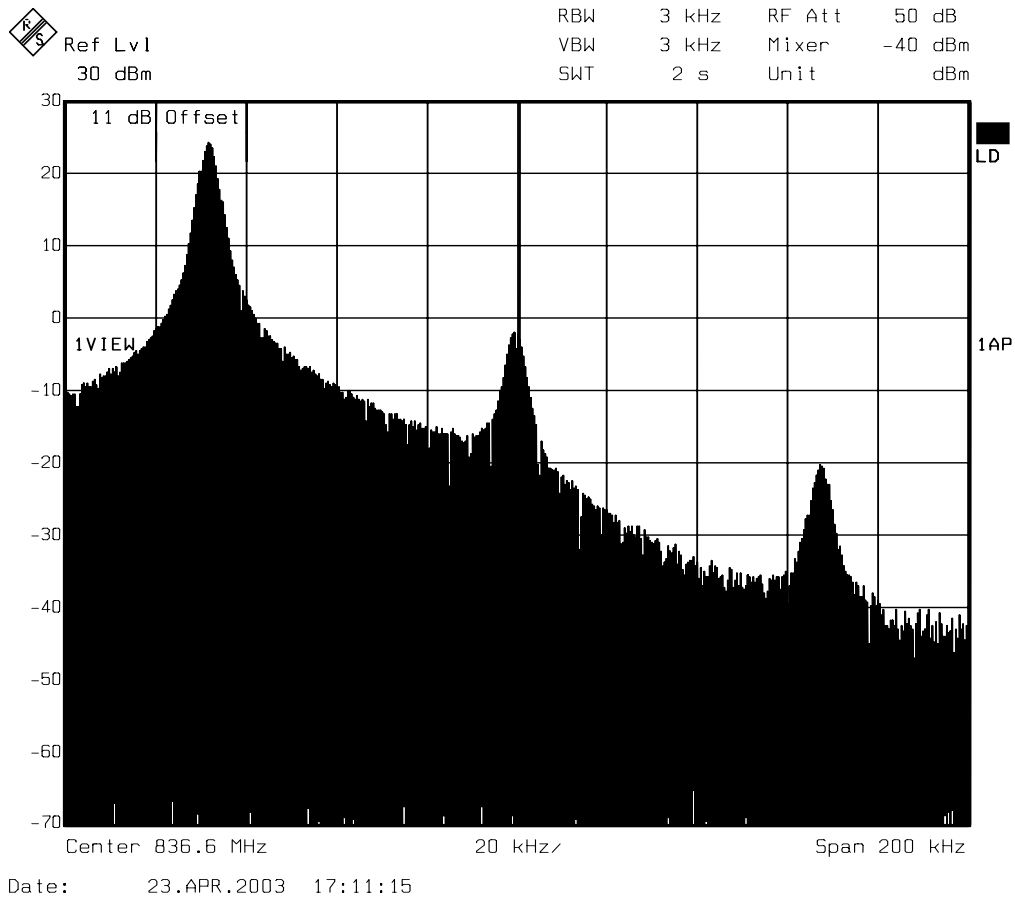
Make the required adjustments of the spectrum analyzer for GSM1900 as shown in the picture.



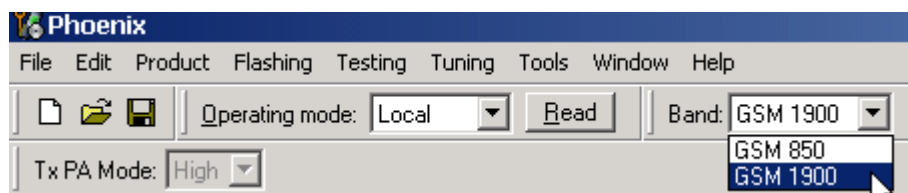
Tune LO leak to minimum with TXI/TXQ DC offset control (**f0 on spectrum analyzer screen**)

Tune wrong sideband to minimum using Amplitude/Phase difference controls (**f0+68kHz**)

on spectrum analyzer screen)



Choose "Save and Continue" to end tuning at the GSM850 band when values are within limits



Finally press "Save and Continue" to stop the tuning process.

Service Tool Concept For Baseband Tuning Operations

EM calibrations should be carried out in JBV-1 Docking Station equipped with DA-1 Docking Station Adapter

Note: RF tunings must be carried out in MJ-6 module jig, JBV-1

Docking Station Adapter can only be used for RF testing purposes

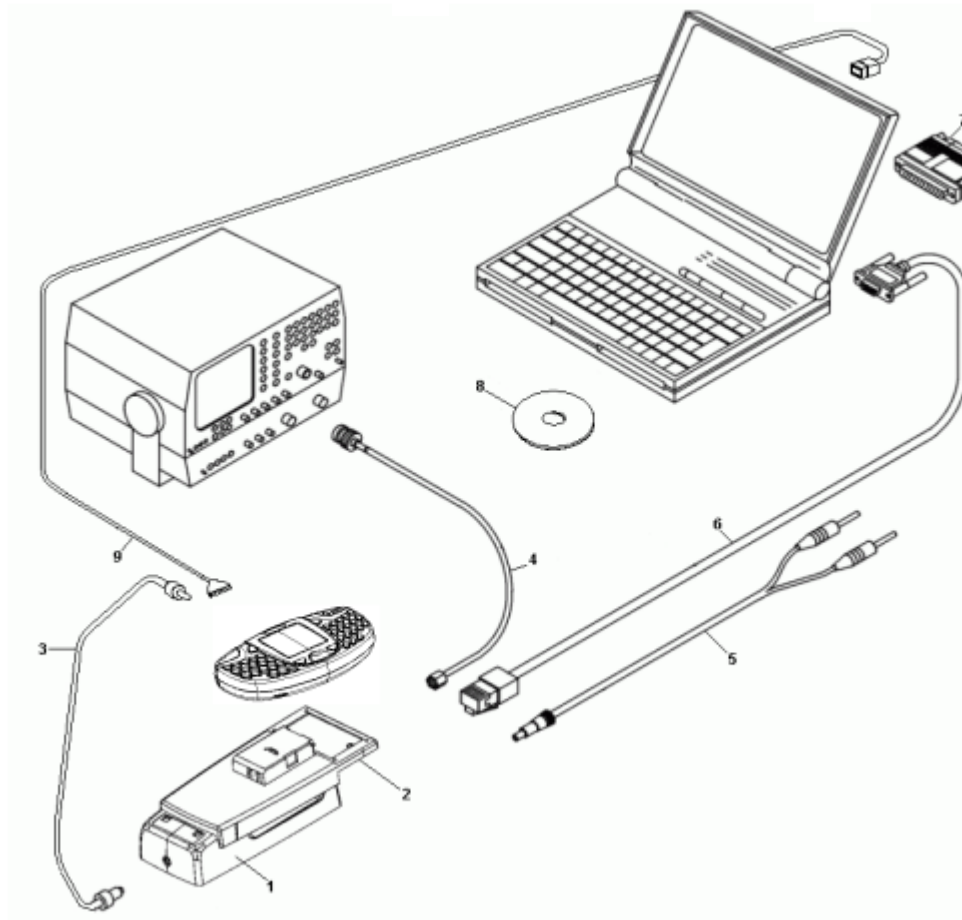
Power to JBV-1 should be supplied from an external DC power supply, not FPS-8 promoter

JBV-1 input voltages:

- Maximum + 16 VDC
- Nominal input for RF tunings is +12 V DC.

Note! RF tunings must be carried out in JXS-2 with DA-1 and JBV-1!

Service Concept for NEM-2 Baseband tunings



Item:	Type:	Service accessory:	Product code:
1	JBV-1	Docking station	0770298
2	DA-1	Docking station adapter	0774288
3	CA-5S	EM calibration cable for JBV-1 and R1011	0730283
4	XRS-6	RF cable SMA to N-connector	0730231
5	PCS-1	Power cable for JBV-1	0730012
6	DAU-9S	MBUS cable	0730108
7	PKD-1	SW protection key	0750018
8		Phoenix Service SW	
9	DKU-2	Tomahawk to USB cable	0730238

Baseband Tuning operations

Energy Management Tuning

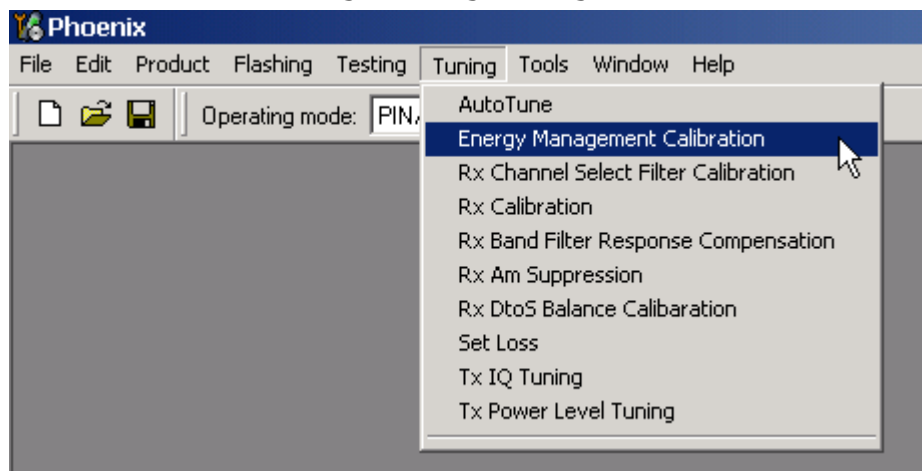
External power supply needed.

EM Calibration is used for calibrating Battery and Charger settings of the phone.

Preparation for EM Calibration:

- Connect DC Cable CA-5S between JBV-1 and Vin of Phone for Charger calibration.
- Connect 12...15 V from Power Supply to JBV-1.
- NOTE! Check that connection is F-BUS (does not work with M-BUS!).

Select Maintenance => Tuning => Energy Management Calibration.



Energy Management values to be calibrated are checked.

Select "Read from Phone" to show the current values in the phone memory and to check that the communication with the phone works.

Select "Calibrate" to run the selected calibrations.

		Calibrated	Phone Values
	ADC Offset [mV]		
	ADC Gain [0.0001 mV/bit]		
☒ Battery Size	BSI Gain [100 Ohm]		
☒ Battery Temperature	BTEMP Gain		
☒ Battery Voltage	SCAL Offset [mV]		
	SCAL Gain		
☒ Charger Voltage	VCHAR Gain		
☒ Charge Current	ICHAR Gain		
☐ Battery Current	IBAT Gain		

Status:

Buttons: Calibrate, Save To Phone, Read From Phone, Change Phone, Help

Limits for Energy Management Calibration:

Parameter	Min.	Max	Note
ADC gain	25400	29000	VBatt, BSI, BTemp
DC offset	-50	50	ADC voltage offset
BSI gain	970	1100	ADC BSI calibration gain
BTEMP gain	2075	2275	ADC BTEMP calibration gain
VBAT gain	10000	11000	ADC VBATT Voltage gain
VBAT offset	2300	2900	ADC VBATT Voltage offset scale
VCHAR	58000	62000	Charge voltage
ICHAR	4050	4800	Charge current

If values shown are within limits select "Save To Phone" to save the values in the phone.

NOTE! Only the values of the checked tunings (Battery size, Battery Temperature etc...) are saved.

Close the "Energy Management Calibration" – dialog to end tuning.

You must manually switch the phone on after exiting "Energy Management Calibration" – dialog.

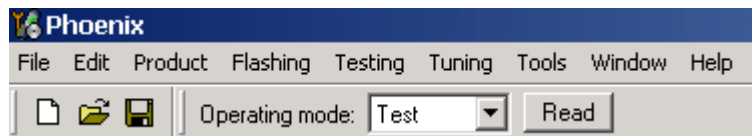
LCD Contrast Tuning

Extra equipment not needed

This function is used to calibrate the LCD Contrast

Must be done when LCD module is replaced and there is a considerable difference in the contrast!

Select TEST mode if not already selected.



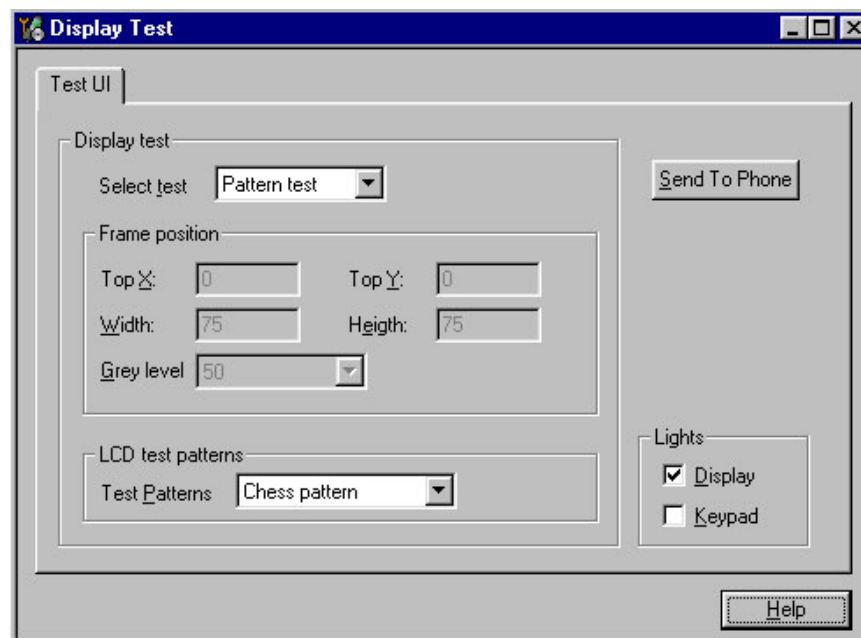
Select Maintenance => Testing => Display Test

Select Test =>Pattern test

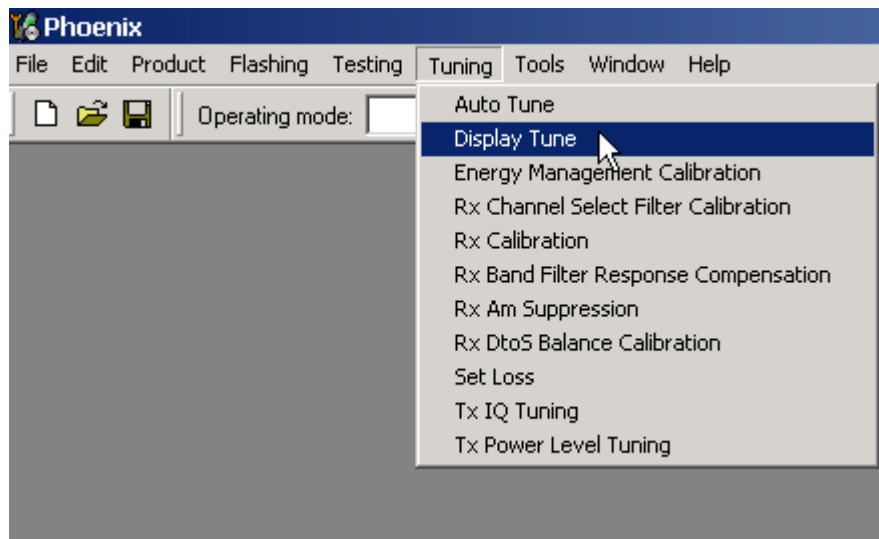
Select Test Pattern => Chess pattern

Select Lights => Display

Select => Send To Phone.



Select Maintenance => Testing => Display Tune

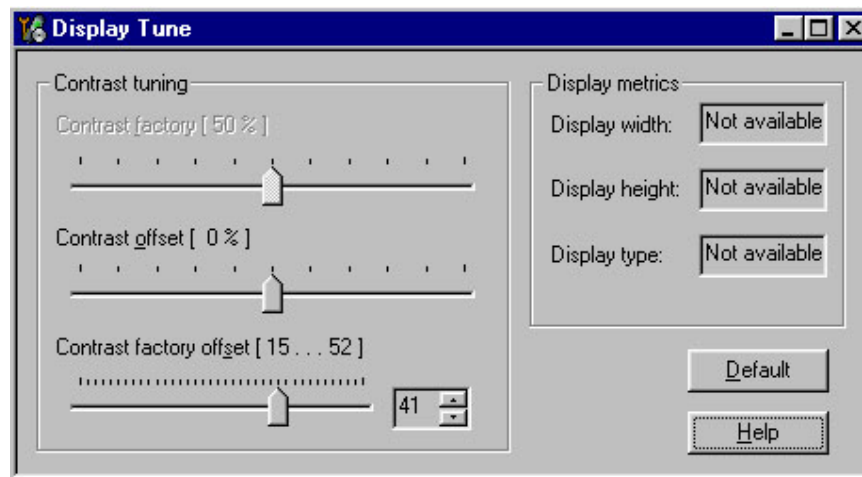


Press "Default" button and following default values will be set;

"Contrast offset slider" is set to 0% (See picture below)

"Contrast Factory offset" slider is set 41

Tune the Contrast by using "Contrast Factory offset" slider..



Close the "Display Tune" – dialog to end tuning.

Check the contrast from the Phone UI.

Check that the brightness has been set to default from Phone's menu 4-4-5

Flashing Setup Instructions

POS (Point of Sales) Flash Concept via FLS-4

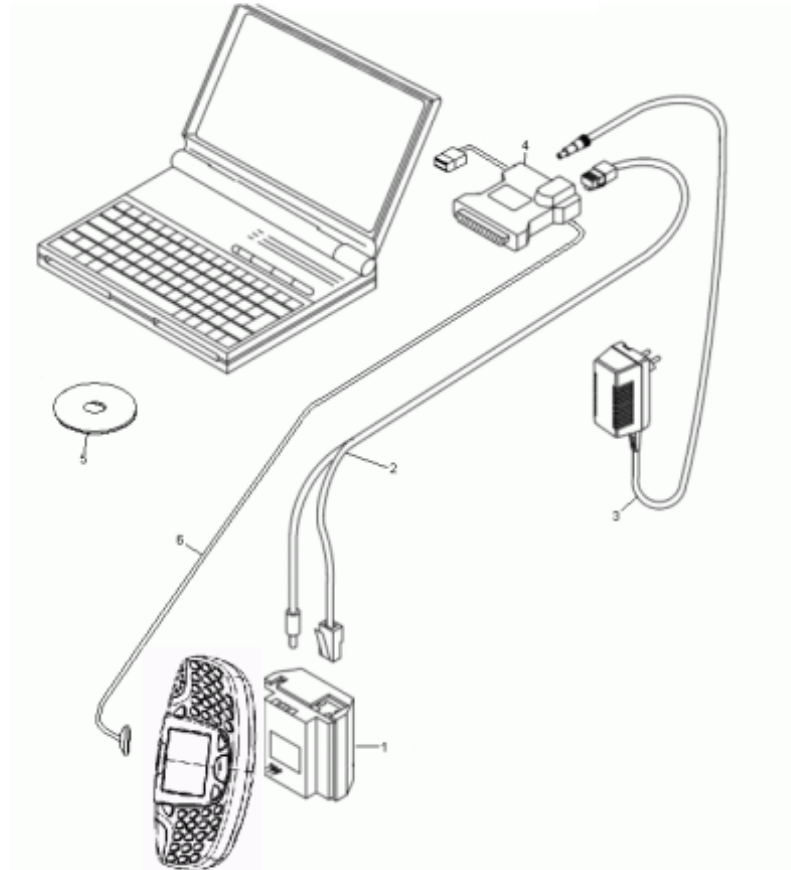


Figure 1: POS flash

Item	Type	Description	Code
	FLA-36	Point Of Sales Flash loading adapter	0770467
2	XCS-1	Modular cable	0730218
3	ACF-8	Power supply incl. in 1)	0680032
4	FLS-4S	PoS Flash dongle	0080543
5		Phoenix Service SW	xxxxxxx
6	DKU-2	Tomahawk USB cable	0730238

Module Jig Concept

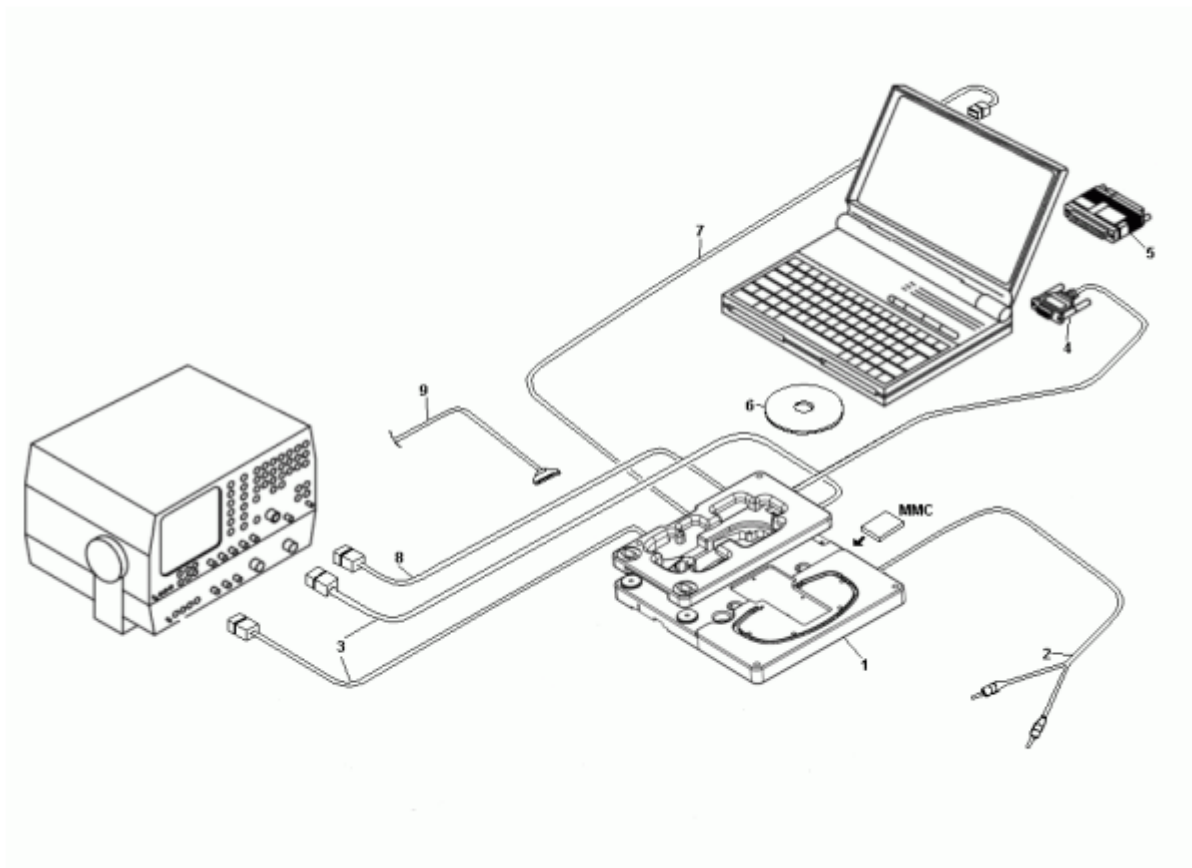


Figure 2: Module jig concept

Note! No tuning with MJ-6!

Item	Type	Description	Code
1	MJ-6	Module repair jig	0770463
2	PCS-1	Power cable for MJ-6	0730012
3	XRS-6	RF cable SMA to N-connector	0730231
4	DAU-9S	MBUS cable	0730108
5	PKD-1	Software protection dongle	0750018
6	n.a.	Phoenix Service SW	
7	DKU-2	Tomahawk to USB cable	0730238
		SMA-BNC audio test cable	
		Tomahawk audio test cable	
		MMC Card	

Flash Concept via FPS-8

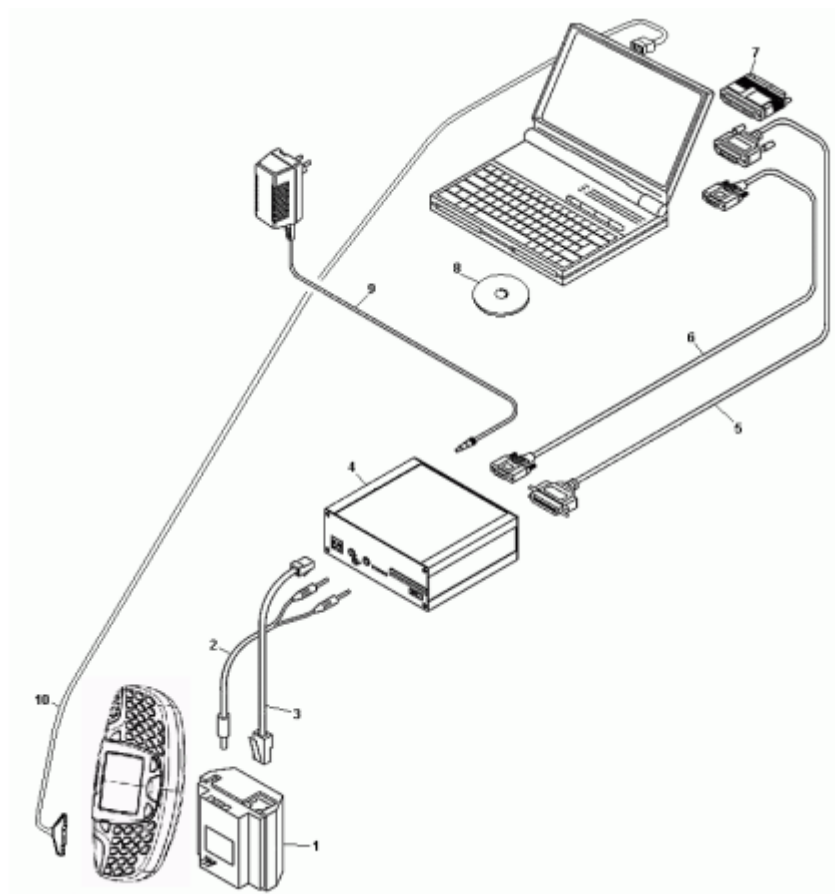


Figure 3: FPS-8 Flash concept

Item	Type	Description	Code
1	FLA-36	PoS Flash adapter for R1011	0770467
2	XCS-1	Service cable	0730218
3	XCS-4	Service cable	0730178
4	FPS-8	Flash Prommer	0080321
5		Incl. in 4)	
6		Incl. in 4)	
7	PKD-1	SW Protection key	0750018
8		Phoenix Service SW	
9		Incl. in 4)	0680032
10	DKU-2	Tomahawk USB cable	0730238

JBV-1 Service Concept

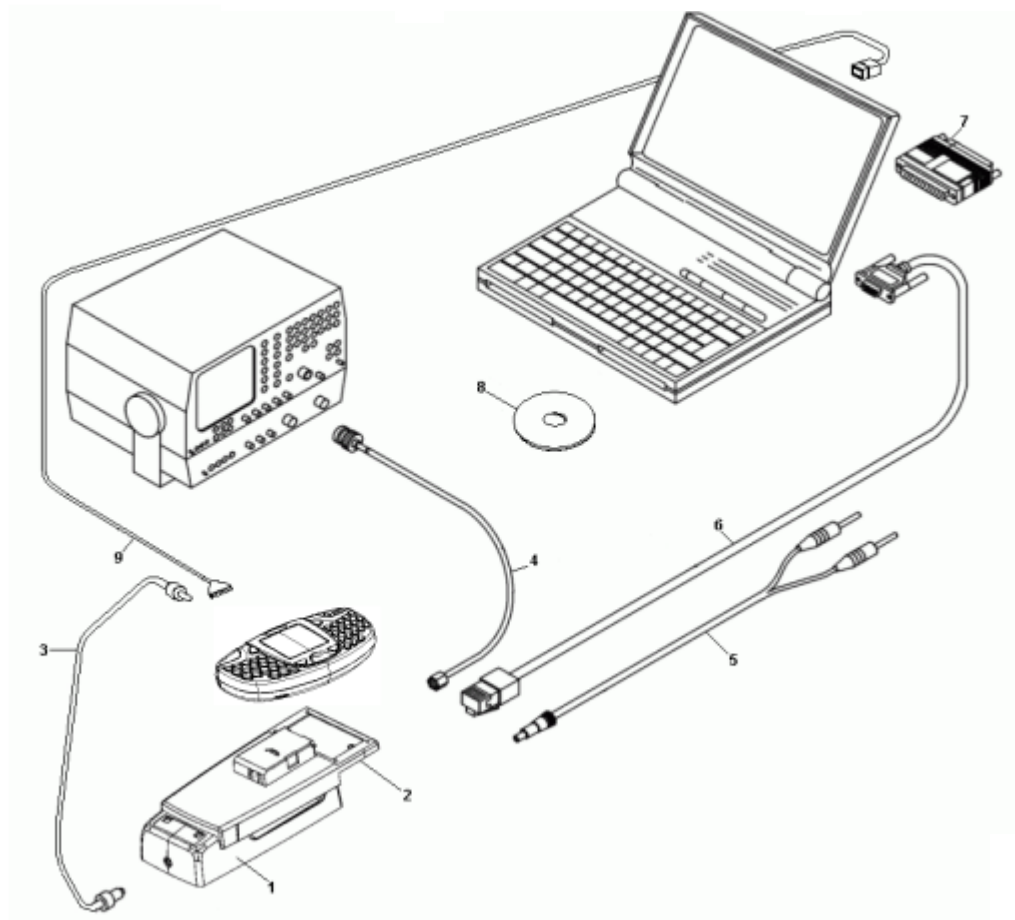


Figure 4: Service Concept

Item:	Type:	Service accessory:	Product code:
1	JBV-1	Docking station	0770298
2	DA-1	Docking station adapter	0774288
3	CA-5S	EM calibration cable for JBV-1 and R1011	0730283
4	XRS-6	RF cable SMA to N-connector	0730231
5	PCS-1	Power cable for JBV-1	0730012
6	DAU-9S	MBUS cable	0730108
7	PKD-1	SW protection key	0750018
8		Phoenix Service SW	
9	DKU-2	Tomahawk to USB cable	0730238

Parallel Flash concept

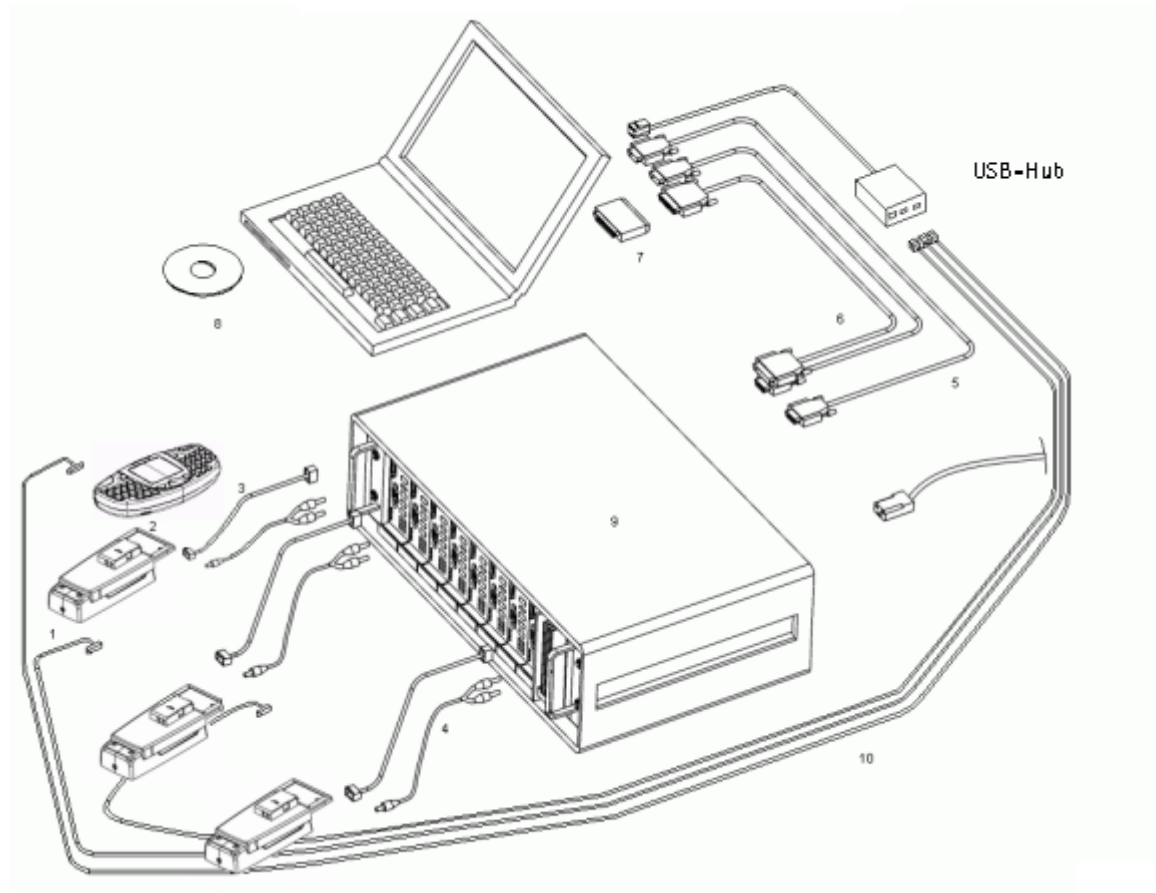


Figure 5: Parallel flash concept

Item	Type	Description	Code
1	JBV-1	Docking station	0770298
2	DA-1	Docking station adapter	0774288
3	XCS-4	Modular cable RJ45	0730178
4	PCS-1	Power cable for JBV-1	0730012
5		Serial cable 2X	from 9)
6		Centronix cable	from 9)
7	PKD-1	SW Protection key	0750018
8		Phoenix Service SW	
9	FPS-8C	Parallel Flash Prommer incl. 5) and 6)	0080396
10	DKU-2	Tomahawk USB cable	0730238

The reflash of **4 phones in parallel** does work on 1 USB Hub connected to either USB 1.1 or USB 2.0 Port on the PC side.

The reflash of more than **4 phones in parallel** requires either:

2 separate 4-port USB Hubs connected to PC with **USB 2.0** support

or

2 separate USB PCI cards supporting USB 1.1 or USB 2.0 installed in the PC. Each of 2 4-port USB Hubs must be connected to the different USB ports on PC side.

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